Ontario Geological Survey
Mineral Deposits Circular 27

Building and Ornamental Stone Inventory in the Districts of Kenora and Rainy River

1986

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Ontario
Ministry of
Northern Development
and Mines

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Building and Ornamental Stone Inventory in the Districts of Kenora and Rainy River

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by C.C. Storey

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Ontario
Ministry of Northern Development and Mines

René Fontaine
Minister
George Tough
Deputy Minister

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Foreword

Northwestern Ontario has had a long history of dimension stone quarrying, reaching its peak in the late 1800s with the construction of the Canadian Pacific Railway through the area. At the present time, two major granite quarries, both located near Vermilion Bay, produce pink granite for building and monumental uses. One small quarry west of Kenora also produces flagstone used largely for facing of commercial and residential buildings. Various types of ornamental stone are also produced intermittently from a number of other small quarries.

Interest in building and decorative stone is currently undergoing a strong resurgence in North America. Demand for the Vermilion Bay pink granite has been steadily increasing each year. Dimension stone used by the building and monument industries has a high unit value comparable to many precious and base metal ores and, despite a popular misconception, can often be shipped economically over long distances. The region is situated adjacent to established stone producing centres in Minnesota and Manitoba and is well located with respect to North American stone markets.

Given this situation in northwestern Ontario, it seems quite likely that additional economic benefits might be available from an expanded dimension stone industry, and the current program was undertaken to investigate this possibility and to facilitate such development, where feasible.

The results of this current inventory work, together with the results of market study recently commissioned by the Ministry, indicate that there is, indeed, good potential for an expanded stone industry in the region, both in terms of the development of additional quarries and for the establishment of a finishing plant. The release of this information by the Ministry will hopefully serve to stimulate development and diversify the economic base of northwestern Ontario.

This program was funded under the Resource Diversification Subprogram of the Northern Ontario Rural Development Agreement (NORDA).

V.G. Milne
Director
Ontario Geological Survey

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CONVERSION FACTORS FOR MEASUREMENTS IN ONTARIO GEOLOGICAL SURVEY PUBLICATIONS.

CONVERSION FROM SI TO IMPERIAL			CONVERSION FROM IMPERIAL TO SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
			LENGTH		
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709 7	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
			AREA		
1 cm^2	0.155 0	square inches	1 square inch	**6.451 6**	cm^2
1 m^2	10.763 9	square feet	1 square foot	**0.092 903 04**	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
			VOLUME		
1 cm^3	0.061 02	cubic inches	1 cubic inch	**16.387 064**	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.308 0	cubic yards	1 cubic yard	0.764 555	m^3
			CAPACITY		
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
			MASS		
1 g	0.035 273 96	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 75	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 62	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 908 8**	t
			CONCENTRATION		
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note. Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in cooperation with the Coal Association of Canada.

Building and Ornamental Stone Inventory in the Districts of Kenora and Rainy River

C.C. Storey[1]

1. Geologist, Ontario Ministry of Northern Development and Mines, Kenora.

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Abstract

This report describes the results of an inventory of building, monumental, and decorative stone deposits in the Kenora and Rainy River Districts of northwestern Ontario. The types of stone covered by this study are granite (in the industrial sense), flagstone and slate, soapstone, and a number of other decorative stone types. All known present and past-producing quarries were examined and sampled in the field. Numerous other deposits and areas of potential, identified through literature research or field reconnaissance, were also examined and sampled. The descriptions of the deposits include such parameters as commodity, status of deposit, location, access, history, and sample results. The report also includes general background information on each of the commodity types.

The inventory has identified a number of deposits that meet most of the criteria for a good dimension stone deposit, and thus may have potential for development. In terms of granite deposits, coloured granites have the greatest potential, followed by grey granites and variegated granites. The southern part of the English River Subprovince is a major area for coloured granite occurrences. Flagstone of varying quality occurs in all the major fault zones of the area. Good quality slates are limited to metasediments or fine-grained metavolcanics in areas of isoclinal folding and moderate to high grade metamorphism. The best potential for soapstone deposits occurs in mafic to ultramafic intrusive rocks. Marble is not plentiful and known occurrences are in relatively remote locations. Rocks that could be used instead of marble in some applications are found in several parts of the area.

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1. Introduction

This report presents the final results of a building and ornamental stone inventory carried out in the Districts of Kenora and Rainy River (Figure 1.1). The work presented herein took place during 1982 and 1983. Much of the data has been published previously in Ontario Geological Survey Open File Reports 5446 and 5522 (Storey 1983; 1984). Figure 1.2 shows the locations of the deposits. The study was inaugurated to evaluate a largely unknown resource which, if more fully developed, could help to diversify the economic base of northwestern Ontario. Funding was provided through the federal-provincial Northern Ontario Rural Development Agreement (NORDA).

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The author was assisted in the field by A. Kolisnik and M. O'Flaherty in 1982, and S. Fitchett and J. Willis in 1983.

Many people in the dimension stone industry gave advice and direction before and during the project. The following were particularly helpful: Carter Nelson of Nelson Granite Vermilion Bay, Bill Rollins of Universal Granite Centre (1976) Ltd. (now Granite Quarriers (GQI) Inc.), Collin Rankin of Rush Bay Quarries Ltd. and Dorothy Richter formerly of Rock of Ages Corporation.

During 1982 personel employed under the joint federal-provincial Mining Sector Work Program became available to carry out reconnaisance field work and sample preparation. R. Boulet, J. Holmstrom and J. Willis were employed on this program; R. Boulet was the senior member of the crew. R. C. Beard, Regional Mineral Resource Co-ordinator, Northwestern Region, Ministry of Natural Resources, and M. A. Vos, Ontario Geological Survey, reviewed the manuscript.

LOCATION AND ACCESS

The area studied is shown in Figure 1.1; it extends northward from the international boundary to the end of reasonable access roads north of Red Lake, and eastward from the Manitoba border to 90°00'W Longitude. The area is crossed by Highways 11, 17, 71, (Trans-Canada Highway system), 72 and 105 plus several secondary highways and numerous township roads, forest access roads and logging roads. Both the Canadian Pacific and Canadian National Railways cross the area. In the past, major water transportation routes existed on all the large lakes and river systems. While water transport is still available it is not used to a great extent.

PREVIOUS GEOLOGICAL WORK

There are comparatively few publications dealing with building and ornamental stone in Ontario. Reports by Hewitt (1964) and Carr (1955) describe the granite producers and past producers. Reports by Wilson (1926), Spence (1922, 1940) and Hewitt (1972) describe the major soapstone occurrences. There are no publications dealing with flagstone and slate *per se* although information on these commodities can be obtained from other government geological reports and maps. Limestone deposits including marble are described by Goudge (1938). In addition to these, annual reports of the former Ontario Bureau of Mines and Department of Mines contain references to periods of production and quantities and types of stone produced for most of the quarries. Unfortunately, for statistical purposes the yearly production statistics of dimension stone have been lumped together with crushed stone in recent years.

Local historical publications such as those by Barr and Dyck (1979) or Sweet (1981) give brief descriptions of stone quarrying in the past and mention some structures built with the output of local quarries.

The evaluation of stone deposits was described in detail by Currier (1960) and Godfrey (1979). Power (1983) and Reed (1978) gave background information on the dimension stone industry; Schenck and Torries (1983) and Bowles and Williams (1963) gave background information on crushed stone. Les Consultants Sogir (1984) carried out a market study on dimension stone in northwestern Ontario. Singleton (1980) and Prud'homme (1982) presented statistics, list major producing areas and outline trends and problems of the American and Canadian stone industries respectively.

The general geology of northwestern Ontario has been described by many authors starting in the first half of the 19th Century with Bigsby (1852) and Owen (in Lawson 1886) and continuing in the latter half of the 19th Century with Bell (1873, 1883), Dawson (1875) and Lawson (1886, 1888, 1913). Geological mapping has continued to the present, by staff of the Ontario Geological Survey and the Geological Survey of Canada and by numerous university researchers.

Each deposit description contains a complete list of literature pertinent to that deposit. In spite of the extent of mapping and the abundant literature on economic geology, many of the areas of predominantly granitoid rocks are only poorly known.

GEOLOGICAL SETTING

The area is underlain by Archean rocks of the Superior Province. It lies close to the western edge of the Canadian Shield. The Superior Province has been subdivided into the English River, Quetico, Wabigoon and Uchi Subprovinces. The Uchi and Wabigoon Subprovinces are characterized by metavolcanic and metasedimentary belts intruded by gabbroic and ultramafic rocks. These belts have been deformed and intruded by several ages of large and small granitoid bodies. The metamorphic grade of the Uchi and Wabigoon Subprovinces varies from greenschist facies to amphibolite facies near some of the granitoid bodies. The rocks have been deformed to varying degrees by numerous intrusive rock bodies and tectonic events. The lower grade metavolcanics and metasediments of the Wabigoon and Uchi Subprovince commonly contain well-preserved primary textures. The Quetico Subprovince is similar in form but is primarily composed of metasediments and is of a somewhat higher metamorphic grade. The English River Subprovince is composed of highly metamorphosed metasediments and minor metavolcanics intruded by several suites of granitoid rocks, particularly in the southern part. The divisions between the

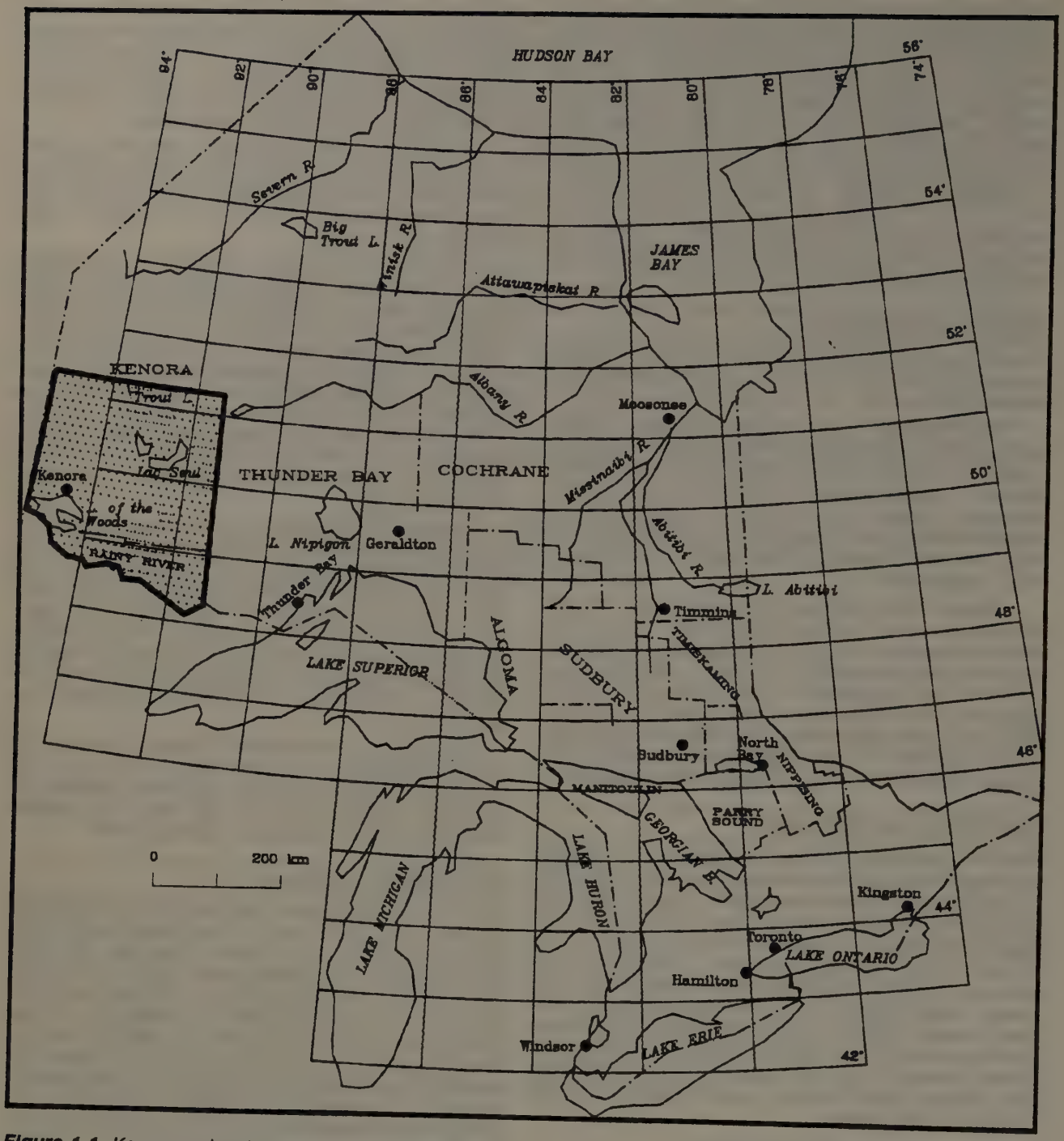


Figure 1.1. *Key map showing location of project area.*

subprovinces are primarily stratigraphic (representing a facies change from predominantly volcanic to predominantly epiclastic) although they are now in part fault bounded due to tectonic overprinting (MacKasey et al. 1974). Blackburn et al. (in press) review the evolution of the Wabigoon Subprovince and its relationship to the adjacent subprovinces. The youngest rocks in the area are cross-cutting Proterozoic diabase dikes.

FOREST COVER AND TOPOGRAPHY

The area is covered by two of the major forest regions of Canada: the Boreal Forest in the north and the Great Lakes - St. Lawrence Forest in the south (Rowe 1972). The Boreal Forest is characterized by coniferous trees, particularly white and black spruce, tamarack, balsam fir and jack pine plus broad leafed species (white birch, trembling aspen); the Great Lakes - St. Lawrence region is a mixed forest characterized by white and red pine, eastern hemlock and yellow birch plus a wide variety of broad leafed species including maples, red oak, basswood and white elm. There is considerable mixing of the two forests in the transition area. The density of forest cover varies drastically depending on the soil type, drainage and recent fire and logging activity.

Large parts of the southwestern English River Subprovince have 50% or more bare rock exposure due to glaciation, fires and logging. In general, areas with little or no soil cover have only sparse forest growth and are favourable to exploration for and development of stone deposits. Undergrowth includes moss and lichen covering the outcrop surface, bracken ferns and small bushes and immature trees. In some of the areas studied this vegetation was detrimental to evaluation of the rock. The surface of the bedrock has been glacially scoured; material has been eroded to varying degrees depending on the resistance of the rock. The resistant granitoid rocks frequently show glacial striations on the surface. While the Canadian Shield is quite level overall, the local topography can be rugged depending on rock and overburden type; local relief of 50-100 m is common in the area of granitoid rocks north of Kenora. Rolling hills of bedrock separated by small lakes and muskeg-filled valleys are common. To the south and east of Kenora overburden becomes more prevalent and large glacio-lacustrine clay deposits (at Dryden and the Fort Frances-Emo area) deposited from Glacial Lake Agassiz and abundant glaciofluvial debris obscure much of the bedrock. Rock exposures in these areas vary from very sparse at Emo to abundant in areas south of Dryden not inundated by the glacial lake or washed clean by wave action. Surficial geology of the area has been outlined by Zoltai (1965) and interpretations of the deposits, their extent and thickness can be found in reports by Gartner et al. (1981).

HISTORY OF STONE QUARRYING

The earliest known commodity quarried in northwestern Ontario was soapstone and similar soft rocks; these materials were quarried in very small amounts by the Indians for carving ornamental and ceremonial items. The modern period of stone quarrying began with the construction of the Canadian Pacific Railway when large amounts of rock were quarried for fill and ballast and more significantly, several granite deposits were quarried for the construction of bridge piers and building foundations. Granite has been produced from one deposit or another almost continously to the present (Table 1.1). Lawson (1886) mentioned the quarry at Hawk Lake as a building granite quarry, although he did not specify if the granite was used for construction other than CPR structures. A building in Kenora dated 1897 appears to have been built using this granite although there is no record of where the stone came from. Stone of many types has been used in the construction of the older buildings and dams. In a few cases granitoid rocks were quarried specifically to produce this stone (Sweet 1981).

The first recorded granite quarries for other than railway use were at Ignace where W. Horne and R. Bannerman commenced producing granite paving blocks from a former CPR quarry in 1912. This operation was closed in 1915 and a new quarry opened at Butler, west of Ignace, which operated until 1952 producing paving stones and rough blocks of building and monumental granite. A small operation by the Ontario Granite Company, north of Kenora at Farlane Station on the Canadian National Railway, produced granite monuments during the 1920s. The stone was finished into monument dies on the property and a few polished pieces are still present on the site. Current granite production is located west of Vermilion Bay where two companies (Nelson Granite Ltd. and Granite Quarriers (GQI) Inc.) produce pink granite in rough blocks to be shipped to Quebec, Minnesota, New Brunswick and Vermont for finishing as monuments and building stone.

The first quarry in the Vermilion Bay granite was opened in 1948 by the Vermilion Pink Granite Company on the site of the present Granite Quarriers (GQI) Inc. quarry. They quarried granite for a short period and then ceased production. The quarry was reactivated by the Scotstown Granite Company in 1954 and closed again in 1960. Rough blocks were shipped to Quebec for finishing. The quarry was bought by Universal Granite in 1971 and major production began in 1976 when the company was renamed Universal Granite Centre (1976) Ltd. This company was bought by Granite Quarriers (GQI) Inc. in the summer of 1984 and continues to operate under this name. In 1981 Nelson Monuments of Sussex, New Brunswick, opened a small quarry in the same granite body 700 m southeast of the Universal quarry. This quarry is currently operated by Nelson Granite Ltd. In 1985 Nelson Granite Ltd. began operating a small processing plant to produce monuments or curbing. Les Consultants Sogir Inc. (1984) described the marketing of the Vermilion Bay granite and gave recommendations for improvements.

Slate and flagstone have been quarried sporadically since 1884 (Table 1.2). In that year, a Mr. Gibbons produced a small amount of roofing slate from a quarry on Slate Island in Lake of the Woods. Flagstone or slaty rock has been removed from many of the islands in the lake for local construction use. Mariposite, a rock with a distinctive green colour,was quarried briefly on the Northern Peninsula of the

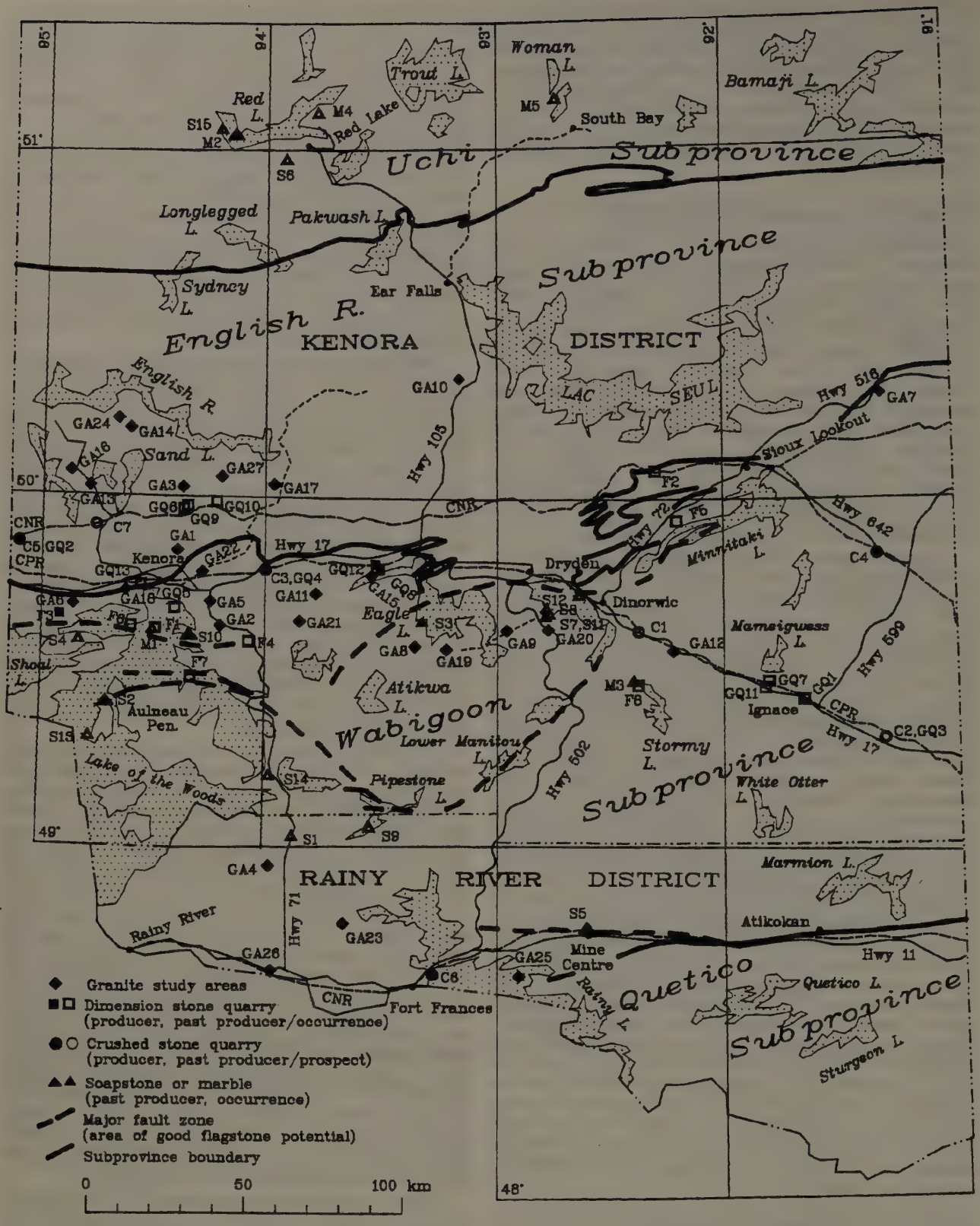


Figure 1.2. *Generalized map of northwestern Ontario showing locations of deposits and major structural features.*

LEGEND FOR FIGURE 1.2.

Major crushed-stone quarries

C1 CPR Avery Township (Melgund Lake)
C2 See GQ3
C3 See GQ4
C4 CNR Watcomb
C5 See GQ2
C6 Rocky Islet (past producer)
C7 Wade (past producer)

Granite quarries and prospects

GQ1 Bannerman and Horne Quarry
GQ2 CNR White Quarry
GQ3 CPR Bonheur Quarry
GQ4 CPR Hawk Lake Quarry
GQ5 CPR Quarry Island
GQ6 Grindstone Lake
GQ7 Gummeson Prospect
GQ8 Nelson Granite
GQ9 Norlicka Minerals
GQ10 Ontario Granite Co. - Farlane Quarry
GQ11 Wm. Horne Granite Co. - Butler Sta. Quarry
GQ12 Granite Quarriers (GQI) Inc.
GQ13 CPR Quarry Island (Keewatin)

Granite study areas

GA1 Austin Lake Gneiss
GA2 Blindfold Lake
GA3 Forgotten Lake
GA4 404 Road
GA5 Junction Granite
GA6 Granite Lake
GA7 Marchington River
GA8 Mulcahy Lake Sill
GA9 Nabish Lake
GA10 Perrault Falls
GA11 Pine Road
GA12 Revell Batholith
GA13 Roughrock Lake/Cygnet Lake
GA14 Sand Lake Road
GA15 Vermilion Bay Gneiss
GA16 Whitedog
GA17 Keys Lake
GA18 Bypass Gneiss
GA19 Chancellor Lake Granite
GA20 Dore Lake
GA21 Hillock Lake
GA22 Island Lake
GA23 Quetico Fault Gneiss
GA24 Sand Lake Road Gneiss
GA25 Scott Islands
GA26 Shenston Township Diabase
GA27 Wonderland Lake Area

Flagstone, slate and mariposite deposits

F1 Gibbons' Slate Quarry
F2 Rainbow Quarry
F3 Rush Bay Quarry
F4 Graphic Lake
F5 Highway 72
F6 Northern Peninsula Mariposite
F7 Yellow Girl Bay - Shore Island
F8 Kawashegamuk Lake Mariposite

Marble deposits

M1 Gaherty Island Carbonate
M2 Hahn Lake (Patricia Lime Company)
M3 Kawashegamuk Lake Area
M4 Suffron Lake Area
M5 Woman Lake Narrows

Soapstone deposits

S1 Claxton Township
S2 Coste Island
S3 Eagle Lake Soapstone Quarry
S4 Labyrinth Bay
S5 Little Turtle Lake Quarry
S6 Madsen
S7 Mile Lake No. 1
S8 Mile Lake No. 2
S9 Pipestone Lake South
S10 Pipestone Peninsula Quarry
S11 Trap Lake
S12 Wabigoon
S13 Mica Point
S14 Phillips Township
S15 Pipestone Bay (Red Lake)

TABLE 1.1. DIMENSION GRANITE QUARRIES AND PROSPECTS IN NORTHWESTERN ONTARIO.

Name	Deposit No.	Operator*	Period of Operation	Product	Location
Bannerman and Horne Quarry	GQ1	W. Horne & R. Bannerman	1912-1915	Dimension stone, paving blocks	Ignace
CPR Quarry I. (Keewatin)	GQ13	Canadian Pacific Railway	Ca. 1882-1900	Granite blocks for bridge piers, and foundations	Winnipeg R. north of Keewatin
CPR Quarry I. (Surrey Island)	GQ5	Canadian Pacific Railway	Ca. 1882	Granite blocks for bridge piers	(Surrey) Quarry I. Lake of the Woods
Gummeson Prospect	GQ7	A. Gummeson	1935-1937	Monumental stone prospect	Mameigwess L. Road (13 km NW of Ignace)
Horne Granite, Butler Quarry	GQ11	Wm. Horne Granite Co.	1915-1952	Dimension stone, paving blocks, monumental stone	Butler Sta. (12 km NW of Ignace)
Nelson Granite	GQ8	Nelson Granite Ltd.	1980- (current producer)	Monumental stone	Vermilion B.
Norlicka Minerals Prospect (Grindstone Lake)	GQ9	Norlicka Minerals Ltd.**	1968	Dimension stone prospect?	Redditt 25 km N of Kenora
Ontario Granite, Farlane Quarry	GQ10	Ontario Granite Co.	Ca. 1920-1925	Monumental stone	Farlane Sta. (33 km NNE of Kenora)
Universal Granite (Granite Quarriers)	GQ12	Granite Quarriers (GQI) Inc.	1948- (current producer)	Monumental stone	Vermilion B.

*Only the current or last known operator is listed; for more details of the history see the property description.
**This company held a quarry permit on this site but it is not known if they performed the work.

TABLE 1.2. STONE QUARRIES AND PROSPECTS OTHER THAN GRANITE IN NORTHWESTERN ONTARIO.

Name	Deposit No.	Operator*	Period of Operation	Product	Location
Coste I. Prospect	S2	F. Thorgrimson	1975	Soapstone for carvings	Lake of the Woods
Eagle L. Soapstone Quarry	S3	Grace Mining Co.	1925-1927	Soapstone blocks for furnace linings	Eagle Lake
Northern Peninsula Mariposite	F6	Ian MacLandress	Ca. 1970	Mariposite for fireplace and decorative landscape use	Northern Peninsula, Lake of the Woods, opposite Fox Island
Gibbons' Slate Quarry	F1	Mr. Gibbons	1884	Roofing slate, material has been removed since for local construction	Slate Island Lake of the Woods
Little Turtle L. Quarry	S5	H.H. Wood Talc Co.	1922,1923	Soapstone for use as metal worker's crayons and gas burner tips	Little Turtle Lake, N of Mine Centre
Mile Lake Prospects	S7,S8	Wabigoon Soapstone Co.	1924	2 small soapstone prospects, no actual production	Mile Lake, S of Dryden
Pipestone Peninsula Quarry	S10	Dryden Pulp and Paper Co.	1915 and later	Sample for use as furnace lining	Pipestone Peninsula, Lake of the Woods
Rainbow Quarry	F2	Rainbow Quarries Ltd.	1972	Mariposite quarried for decorative use in construction & novelty items	Hudson
Rush Bay Quarry	F3	C. Rankin	1978- (current producer)	Flagstone for use in building and patio construction	Forgie Township
Trap Lake Prospect	S11	E.G. Pidgeon (Thermo-stone Quarries Ltd.)	1923	Small prospect, no production	Trap Lake, S of Dryden
Wabigoon Prospect	S12	Wabigoon Soapstone Co.	1921,1922	Sampling and development work, no actual production	Zealand Township

*Only the current or last known operator is listed; for more details of the history see the property description.

Lake of the Woods and from a small deposit west of Hudson in 1972. Rush Bay Quarries has produced flagstone from a sheared rhyolite tuff in Forgie Township since 1978. This material is sold for building facing, patio and fireplace construction.

Soapstone deposits were extensively prospected and three were put into production between 1915 and 1927. The material was used for refractory purposes (gasburner tips and furnace linings) but often proved unsatisfactory. Interest in soapstone since 1927 has largely been directed at material for carving decorative and ceremonial objects. The old Wabigoon Soapstone Company has been reactivated as Wabigoon Resources Ltd.; in the fall of 1983, they began re-evaluating the Wabigoon Soapstone deposit for its talc and soapstone potential.

Crushed stone has been produced for railway ballast, fill and concrete aggregate since the 19th Century. The earliest report of a quarry exclusively for the production of railway ballast was in 1929, but many excavations close to the CNR and CPR right of ways indicate quarrying concurrent with construction. The ballast quarries account for the greatest proportion of crushed stone produced and are the only ones regularly worked on a continuing basis, but many quarries have been opened to supply stone for highway and other construction uses.

COMMODITIES

The commodities studied and described comprise: black granite, decorative stone, flagstone, granite, landscape material, marble, limestone, slate, soapstone, traprock and variegated granite. Of these commodities only granite, flagstone, landscape material, trap rock and soapstone have been produced in northwestern Ontario. Granite has been the major stone produced.

The rock names used in the stone industry often bear little or no relation to the currently accepted petrological nomenclature. While the terms are used more or less consistently within the industry, local variations do occur.

COMMODITY DEFINITIONS

Black "Granite". Any crystalline igneous rock of dark grey, dark green, dark brown, dark blue or black colour. Typically, these are gabbro, norite, diabase and similar mafic intrusive rocks.

Decorative Aggregate. This material covers a wide variety of rock types used to make the face mix for precast concrete panels. These are usually crystalline igneous rocks but other lithologies are also used. They must be resistant to weathering or discolouration.

Decorative Stone. Any rock with an attractive colour and/or texture that lends itself to the manufacture of small objects (bookends, ash-trays, etc.) or decorative accent pieces for fireplaces or similar types of construction. The rock types included are all types of intrusive rocks, vein deposits, and some metsediments and metavolcanics.

Flagstone. Rocks with a well developed cleavage that can be easily split into thin straight sheets. They are either fine-grained metavolcanics or metasediments that have been sheared or tightly folded.

Granite. Any light coloured crystalline igneous rock. This term includes granite, syenite, quartz monzonite, granodiorite, etc. In general these are intermediate to felsic intrusive rocks commonly mapped as granitoid.

Landscape Material. Any decorative rock used primarily as part of a landscape design including crushed coloured stone for walks, driveways and around plantings, boulders used for borders, rock gardens and accent points in a garden. The most common product is marble chips sold in bags at garden centres but boulders, granite chips and large rough blocks are also used.

Marble and Limestone. The commercial distinction between these is that marble is any carbonate rock that can be polished while limestone is any carbonate rock that cannot be polished well or is not required to be polished. For most purposes (i.e. geological descriptions) the term marble is restricted to crystalline (i.e. metamorphosed) carbonate rocks. In the stone industry the term marble includes dark green serpentinites marketed under the name *Verde Antique,* travertine and onyx marble (crystalline limestone deposited from hot springs and crystalline limestone deposited from cold water respectively).

Pipestone. A non-specific term for a rock soft enough to be carved into tobacco pipes by the native peoples. It includes soapstone, argillite, soft slate and similar lithologies.

Slate. True slate is a fine-grained metamorphosed mudstone or shale which has a well developed slaty cleavage due to deformation. The cleavage is the distinguishing feature. It must be developed to such an extent that thin identical sheets with a smooth surface can be split. Some definitions include fine-grained metavolcanics with a slaty cleavage as true slate.

Soapstone. A soft talcose rock of no fixed composition, the primary criteria being that it is soft and has an unctuous feel. Most soapstones are composed essentially of talc with varying amounts of other minerals (carbonate, micas, amphibole, etc.) Some sericite and chlorite schists are soft and slippery feeling enough to be called soapstone, but these should be kept separate from the true soapstones.

Traprock. A non-specific term covering dark coloured igneous rocks such as diabase, basalt, gabbro, and diorite, crushed for aggregate use. The coarser grained varieties of intrusive rock (gabbro, diorite, diabase) are more often classified as black 'granite' with the term *trap* reserved for fine-grained intrusive and extrusive rocks.

Variegated Granite (Gneiss). These rocks are usually lumped together with granite by the industry. They include a wide variety of gneissic igneous and metamorphic rocks. Both uniformly layered

and nebulitic gneisses have been quarried in Minnesota and other areas for monumental and building stone.

METHODOLOGY

The project commenced with a review of the literature to find all references to building and ornamental stone deposits and any descriptions of rock types that might have potential as building or ornamental stone. There are very few specific references to granite and similar rock deposits other than brief descriptions of most of the existing quarries. The descriptions of granitoid rocks in published and unpublished geological reports are often highly generalized and rarely give sufficient detail to determine whether or not a particular granitoid body has potential as building stone. Many parts of the area underlain by granitoid rocks have only been mapped at a reconnaissance scale.

All known producing and past producing quarry sites were examined and sampled. Much of the field work also involved reconnaissance examination of broad areas of granitoid and other rock types that appeared to have potential from the literature. Personnel employed under the joint federal-provincial Mining Sector Work Program were available from the end of August to December of 1982 to carry out some of this reconnaissance work. The reconnaissance showed up several areas of granitoid, gabbroic and slaty rocks that warranted further detailed mapping and sampling. All areas were examined and at least one sample representative of the most uniform fracture-free material was taken. These samples were sawed to 10 by 15 cm slabs, 1 to 2 cm in thickness, and polished. Petrographic descriptions were done from the polished surface.

LABORATORY WORK

Laboratory work was done by the Geoscience Laboratories, Ontario Geological Survey, Toronto. This consisted of X-ray diffraction mineral determinations of various rocks, most of them soapstone or talcose rocks; identification of minerals; major and trace element analyses of marbles; 30-element spectrographic analyses; and trace element (including gold) geochemical analyses of selected samples. The results are presented with the pertinent deposit description. Major elements were determined by X-ray fluorescence and Ba, Co, Cr, Cu, Li, Ni, Pb and Zn were determined by atomic absorption.

The detection limits for atomic absorption analyses are:

Ba	10 ppm
Co	5 ppm
Cr	5 ppm
Cu	5 ppm
Li	3 ppm
Ni	5 ppm
Pb	10 ppm
Zn	5 ppm

X-ray diffraction mineral determinations provide an estimate of quantity present, as follows:

A	major;
B	moderate;
C	minor;
D	very minor;
(+	more, – less);
–	not detected by X-ray;
?	uncertain identification.

Qualitative spectrographic analyses (30 elements) analysed for the following elements:

Antimony
Arsenic
Beryllium
Bismuth
Cadmium
Cerium
Chromium
Cobalt
Copper
Germanium
Lead
Lithium
Manganese
Mercury
Molybdenum
Nickel
Niobium
Silver
Tantalum
Tellurium
Thorium
Tin
Titanium
Tungsten
Uranium
Vanadium
Yttrium
Zinc
Zirconium
Iron

The spectrographic analyses were categorized as follows:

H	10	to	100%
MH	5	to	15%
M	1	to	10%
LM	0.5	to	5.0%
L	0.1	to	1.0%
TL	0.05	to	0.5%
T	0.01	to	0.10%
-	None detected (or less than 0.10%)		

PREPARATION OF POLISHED SAMPLES

Representative samples of each quarry, granite area and many of the reconnaissance samples were cut into 10 by 15 cm or larger slabs of varying thickness. These samples were ground and polished on a Highland Park Vi-Bro-Lap polisher using silicon carbide abrasive powder and tin oxide or aluminum oxide polishing compound. The samples were produced for petrographic examination and display purposes. A suite of samples is on file at the Kenora Resident Geologist's office (Ministry of Northern Development and Mines).

2. Crushed Stone

Large amounts of granite and similar rocks have been quarried and crushed for use as railway ballast (Bonheur, Hawk Lake and White quarries) and for construction of roads, dams, bridges and rock-filled causeways. Both metasediments and metavolcanics have also been quarried for these purposes. The use of metabasalt and similar mafic metavolcanics for railway ballast is increasing as these rocks do not produce as much dust and fines when crushed as the granitoid rocks do. A large ballast quarry at Watcomb was developed in metabasalt by the Canadian National Railway in 1972 and in 1983 the Canadian Pacific Railway began developing a new ballast quarry in metabasalt in Avery Township near Dyment (Melgund Lake quarry).

In 1983 approximately 820 000 tonnes of crushed stone were produced in the District of Kenora for various purposes including railway track ballast (Weatherson 1984). Four quarries are currently operated exclusively for ballast. Crushed stone is produced on an intermittent recurring basis by both the Canadian National and Canadian Pacific Railways. Rock is quarried and crushed by a contractor and stockpiled for use as required.

Ballast quarries were first recorded in 1929 with the re-opening of the Hawk Lake quarry for crushed stone but other sites were probably in use from the time of construction of the CPR in 1882. Table 2.1 lists the seven major crushed stone quarries in the area. In addition to these quarries there are many small quarries along the highways and railways where stone has been obtained for construction purposes. The lack of satisfactory surficial aggregate deposits in some areas has led to extensive crushing of bedrock for fill and various construction uses.

On Figure 1.2, the deposits indicated as past producers are known to be more or less permanently out of production but the others are intermittent producers; some years stone is quarried, some years it is not.

The colour and texture of the rock is not important for use as crushed stone but the location of the deposit and ease of quarrying is. Many of the crushed stone quarries show closely spaced joints and sheets as opposed to the widely spaced joints and sheets in dimension stone quarries. Close spacing would allow greater fragmentation during blasting and make subsequent handling and crushing easier.

TABLE 2.1. MAJOR CRUSHED-STONE QUARRIES IN NW ONTARIO.

C1	CPR Avery Township (Melgund Lake)	Traprock for ballast
C2	CPR Bonheur (past producer)	Crushed granitoid rock for ballast. See GQ3.
C3	CPR Hawk Lake	Crushed granitoid rock for ballast. See GQ4.
C4	CNR Watcomb	Traprock for ballast.
C5	CNR White	Crushed granitoid rock for ballast. See GQ2.
C6	Rocky Islet (past producer)	Crushed granitoid and metasedimentary rocks for fill and aggregate.
C7	Wade (past producer)	Crushed granitoid rock for aggregate.

3. Crystalline Igneous Rocks (Granite)

The stone industry classifies all crystalline igneous rocks and some metamorphic rocks as granite. In terms of end use, these include dimension stone for monumental or building use, small blocks for decorative objects, and crushed products for concrete aggregate, decorative aggregate or rock fill. The various commodity terms are defined in the previous section.

The criteria for granite dimension stone deposits are described below in approximate order of importance.

1. Fracture and jointing are important criteria since they control the maximum size of blocks that can be quarried. There are two types of joints: vertical (sometimes called headers) and horizontal (usually called sheets). In mapping granitoid rocks that might have potential for dimension stone, the major joint directions and spacing, in particular the minimum spacing, must be recorded. The dip angle and spacing is more important than the strike direction. Granites with moderately dipping (diagonal) joints are less desirable as dimension stone because of the increased difficulty of quarrying blocks. Sheeting joints usually dip at some small angle, often subparallel to the ground surface.
2. The colour and texture of a granite must be consistent. Most granitoid rocks vary too much in colour and texture to be usable.
3. The colour and texture must be commercially desirable. This varies with changing tastes in both buildings and monuments. An exact duplicate of a domestic granite already in production is not as desirable as a different granite. Alternately a good domestic replacement for a high priced import is always desirable. Black, red and white are colours currently in demand.
4. Any mineral that breaks down rapidly due to weathering is undesirable. Sulphides usually render a deposit useless. Many 'black granites' frequently contain deleterious disseminated pyrite and pyrrhotite. Occasional pyrite grains, present in many granites, if small and isolated may not present a problem. Soft ferromagnesian minerals, olivine, and altered feldspars are also undesirable — they weather poorly and often will not sustain a polish. Magnetite and ilmenite are common in granites but are resistant to weathering, therefore not usually presenting a problem. Garnet and corundum can give serious problems in polishing because of their hardness. Excessive biotite (greater than 5%) can cause plucking during polishing.
5. Sufficient material should be present to quarry for many years (20 to 50 or more). Some quarries in Vermont have been operating for over 100 years. A minimum size is about 1 km^2 (1 UTM square on a 1:50 000 map).

COLOUR

Granite can be divided into 4 groups on the basis of colour; these are: white and grey granite, coloured granite (pink, red, brown, purple etc.), variegated granite (gneiss) and black granite (including various shades of dark grey and dark green). Colour is the result of a combination of mineralogy and grain size. A fine-grained granite is generally darker in colour than a coarse grained granite of the same mineralogy. Quartz and feldspar, the major minerals of granite, are colourless or grey to pale pink, resulting in a light coloured stone. Hematite is the main colouring mineral in the coloured and variegated granites. It occurs interstitially and disseminated as inclusions in the potassium feldspars. The amount of hematite in the feldspar varies widely: in some cases it is evenly distributed and in others is concentrated along perthite lamellae and near the edges of the crystals. The depth of colour depends on the amount of hematite present in the rock. The mafic minerals present can have a considerable effect on the overall colour of the stone, particularly the grey granites where the colour darkens with increasing mafic content. In most of the coloured granites the mafic minerals are unobtrusive but help to define the texture of the rock. Granites with a strong texture (variegated granite in particular) usually have a higher proportion of mafic minerals than uniform coloured or grey granites. The actual colour of a granite depends on the combination of major minerals, mafic minerals and hematite content. All descriptions of colour are arbitrary and are strongly affected by the perception of the person viewing and describing the stone.

The surface finish applied to a granite affects the perception of colour. A highly polished surface appears darker than a sandblasted or sawn surface on the same stone. This colour contrast is a desirable feature in any granite that will receive sandblasted lettering.

JOINTS

Joints and sheets are the response of a rock to a tensile stress; they are not restricted to granite but occur in all rock types. They are more important in dimension granite and marble quarrying than in other types of stone quarrying. Jointing in granite has been discussed by Brisbin (1980) and a discussion of jointing in igneous rocks is included in most structural geology textbooks such as Hills (1963).

There are at least three joint sets in a granite body; two subvertical roughly orthogonal sets and a horizontal set, often referred to as sheeting. Many granites have additional subvertical joints or joints that dip at moderate angles (Figure 3.1). The maximum size of block that can be quarried is controlled by the joint spacing. The minimum spacing for satisfactory quarrying is about 2 m for vertical joints and 1 m for sheeting (quarried blocks are usually 1 by 2 by 1.5 m or greater in size). Most granite deposits in production have joint spacing much greater than this. Granite bodies that have no apparent vertical joints frequently have close spaced sheeting and vice versa. Joint or sheet spacing 1 m or less was arbitrarily taken as close spacing.

Joints are a regular feature that occur at a certain minimum spacing in a given granite deposit. The strike directions of members of a joint set can vary several degrees; an arbitrary value of 10 degrees was selected for this study. Joint systems can be satisfactorily described by a rose diagram and a

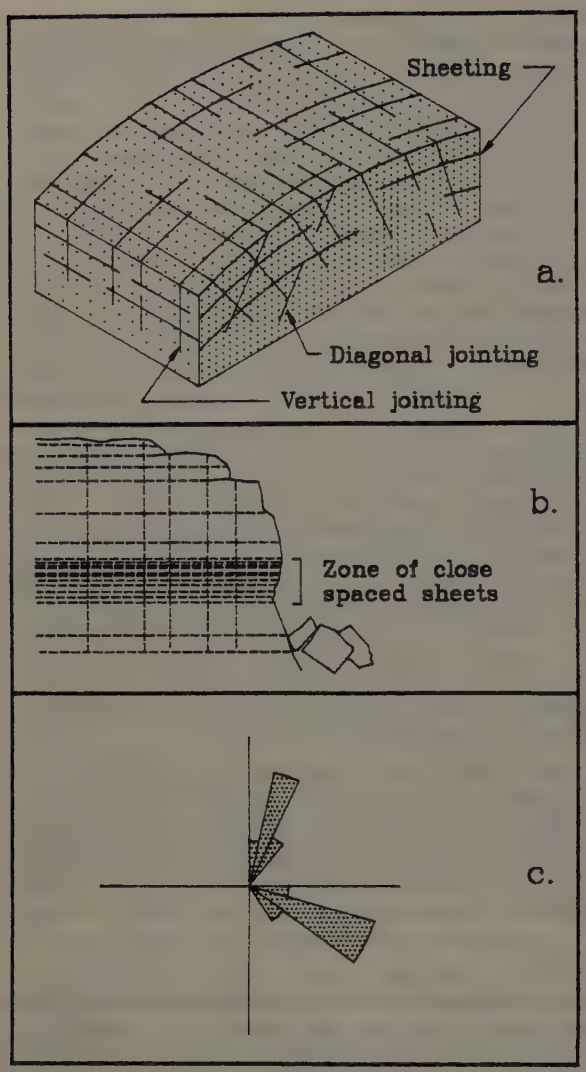


***Figure 3.1. (a)** Joints in granite (after Hills 1963).*
***(b)** Close-spaced sheets at depth (~ 20 m).*
***(c)** Typical rose diagram illustrating orthogonal joint sets.*

statement of minimum spacing. A rose diagram (see Figure 3.1c) is a circular histogram that expresses the frequency distribution of joint directions.

Sheeting joints are subparallel to the ground surface and divide the granite into sheets or beds. They usually thicken with depth although in some cases, zones of very thin (4 to 20 cm) sheets can occur at depths of 20 m or more below the surface as shown in Figure 3.1b. This situation, if not identified during preliminary investigation of a deposit causes severe difficulties during subsequent quarrying and could render the deposit unusable. Joints that dip at an angle less than about 75 degrees make quarrying difficult as do vertical joint sets that intersect at an angle less that 60 degrees or a third joint set at an angle to the orthogonal set (as shown in Figure 3.1a). Occasional closely spaced sheeting joints can occur in any granite deposit.

Sheeting is usually attributed to stress release or exfoliation although it may be related as well to other stress regimes during the history of the granite. The fact that sheeting is subparallel to the ground surface tends to support the stress release hypothesis of its origin. Vertical joints are caused by stress in the granite during its emplacement, cooling, post emplacement deformation and fatigue due to solid earth tides. The regular spacing of joints is controlled by the various applied stresses and the rheologic properties of the rock including compressive and tensile strength, grain size, texture and mineralogy. Brisbin (1980) reviews the literature and theories about jointing.

GRANITE CLASSIFICATION

The industrial term granite includes many lithologies in addition to those classified by geologists as granite or granitoid. The petrological classification system devised by Streckeisen (1976) and illustrated in Figure 3.2 is used in this report for granitoid igneous rocks. This system was not used for other lithologies described in this report.

MINERALOGY

Grey/white, coloured and variegated granites are composed mostly of quartz, orthoclase and/or plagioclase feldspars plus a small mafic mineral content (5%), usually biotite. Hornblende is found in some granites and combinations of biotite and hornblende occur. Muscovite is present in a few granites. The lithological name of a granitoid rock is based upon its quartz content and proportion of the two feldspar types. Most of the granites studied are two-feldspar granites. Only a few plagioclase-rich granitoid rocks were found. Figure 3.3 shows the mineralogy of many of the more economically promising granites. Most fall in the granite to granodiorite fields of the Streckeisen QAP diagram. Colour is not dependent on the major minerals although the coloured granites tend to contain potassium feldspars in significant amounts.

The accessory minerals present are hematite, magnetite, pyrite, primary epidote, and secondary epidote (in fractures). The products of hydrothermal alteration of feldspar, garnet, zircon, and apatite can also be present particulary in some of the late phases (pegmatites, aplites and the host rocks immediately adjacent to them) of a granitoid body.

The major minerals in 'black granites' are plagioclase feldspar and pyroxene or olivine; the main accessory minerals are pyrite, pyrrhotite, magnetite, illmenite and alteration products. These rocks have frequently been altered so that many of the primary minerals are now represented by pseudomorphs of hydrothermal minerals after pyroxene or feldspar.

TEXTURE

The stone industry requires granite to be either very uniform in texture or distinctly non-uniform in an interesting and consistant manner. Monumental granite has traditionally had an even, fine grain size, although monuments have been made from gneiss,

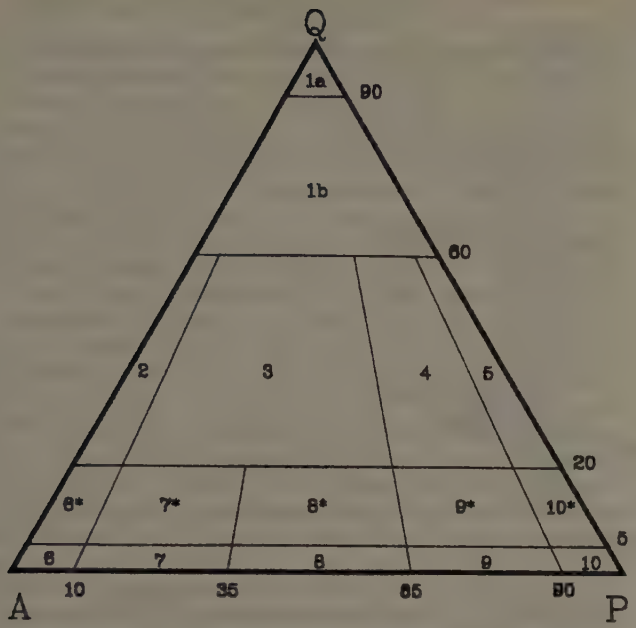


Figure 3.2. *Classification of granitoid rocks based on modal mineralogy (after Streckeisen 1976).*

- ***Q*** *quartz*
- ***A*** *alkali feldspars (including plagioclase An_{0-5})*
- ***P*** *plagioclase (An_{5-100}).*
- ***1a*** *quartzolite*
- ***1b*** *quartz-rich granitoids*
- ***2*** *alkali-feldspar granite*
- ***3*** *granite*
- ***4*** *granodiorite*
- ***5*** *tonalite*
- ***6**** *quartz alkali-feldspar syenite*
- ***7**** *quartz syenite*
- ***8**** *quartz monzonite*
- ***9**** *quartz monzodiorite/quartz monzogabbro*
- ***10**** *quartz diorite/quartz gabbro/quartz anorthosite*
- ***6*** *alkali-feldspar syenite*
- ***7*** *syenite*
- ***8*** *monzonite*
- ***9*** *monzodiorite/monzogabbro*
- ***10*** *diorite/gabbro/anorthosite*

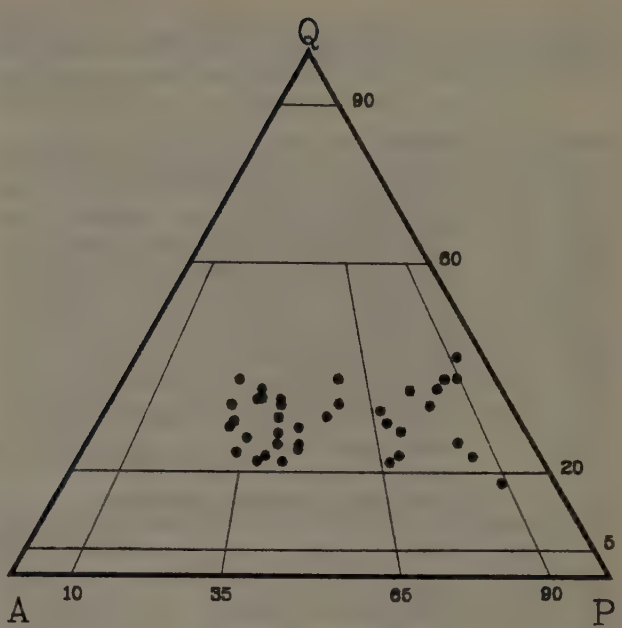


Figure 3.3. *QAP plot of granitoid samples from granite quarries and study areas. See Figure 3.2 for classification.*

porphyrytic granite and similar rocks. Building granite can be less uniform in texture than monumental granite and coarse or variable grain-size with a distinctive appearance is frequently desired. The common textural flaws are listed below:

- knots – dark coloured masses of mafic minerals from one to several centimetres wide, usually the remains of xenoliths.
- lines – any textural feature that shows up on the surface of the stone as a linear pattern.
- foliation – shows up as lines.
- grain size changes.
- pegmatite patches.
- quartz veins.
- layering – shows up as lines.
- flow banding – shows up as lines or texture changes
- schleiren

In some cases these flaws are used to advantage in stone quarried for specific purposes such as architectural accent pieces or furniture.

GRANITE DEPOSITS

The granite deposits described are of two types: (a) prospects, producing and past producing deposits, and (b) deposits of crystalline rock, identified during the field season, that were deemed to have some potential as commercial granite. The location, access, geological description and recorded history of each producing and past producing deposit and of the potential deposits identified during the project are given. The deposits are listed in Table 3.1 and their general locations are shown in Figure 1.2.

The granite study areas (GA) are stone deposits identified during reconnaissance work which have never been quarried as dimension stone. These deposits have been described in detail and are grouped on the basis of a combination of colour, jointing, access and deposit size. Group I deposits are the most desirable, Group III the least. The Group I deposits combine large size, uniform colour and reasonably good joint patterns. Group II deposits have a desirable colour and texture and a joint pattern that might allow quarrying but may not be as desirable as Group I. The colour and texture are usually somewhat less commercially attractive. All variegated granite was assigned to Group II. Group III deposits have a good colour but have one or more problems such as deficiency in size, excessive textural flaws, closely spaced joints, remote location, or lack of exposure.

TABLE 3.1. BUILDING AND MONUMENTAL GRANITE DEPOSITS.

Quarries and Prospects

No.	Name	Colour
GQ1	Bannerman and Horne Quarry	Grey
GQ2	CNR White Quarry	Grey
GQ3	CPR Bonheur Quarry	Grey Variegated
GQ4	CPR Hawk Lake Quarry	Grey
GQ5	CPR Quarry Island	Grey
GQ6	Grindstone Lake	Pink
GQ7	Gummeson Prospect	Grey
GQ8	Nelson Granite	Pink
GQ9	Norlicka Minerals	Pink Variegated
GQ10	Ontario Granite Co. - Farlane Quarry	Pink-Brown
GQ11	Wm. Horne Granite Co. - Butler Sta. Quarry	Grey
GQ12	Granite Quarriers (GQI) Inc.	Pink
GQ13	CPR Quarry Island (Keewatin)	Grey

Granite Study Areas

No.	Name	Colour	Group
GA1	Austin Lake Gneiss	Pink Variegated	II
GA2	Blindfold Lake	Pink	II
GA3	Forgotten Lake	Brown	I
GA4	404 Road	Pink	II
GA5	Junction Granite	Pink	III
GA6	Granite Lake	Pink	III
GA7	Marchington River	Pink	III
GA8	Mulcahy Lake Sill	Black	I
GA9	Nabish Lake	Black	II
GA10	Perrault Falls	Pink	III
GA11	Pine Road	Deep pink	I
GA12	Revell Batholith	Grey	I
GA13	Roughrock Lake/Cygnet Lake	Pink-red	I
GA14	Sand Lake Road	Brown	II
GA15	Vermilion Bay Gneiss	Pink Variegated	II
GA16	Whitedog	Red	I
GA17	Keys Lake	Grey Brown	I
GA18	Bypass Gneiss	Pink Variegated	II
GA19	Chancellor Lake Granite	Pale Pink	II
GA20	Dore Lake	Grey	II
GA21	Hillock Lake	Pink	I
GA22	Island Lake	Black	II
GA23	Quetico Fault Gneiss	Pink Variegated	II
GA24	Sand Lake Road Gneiss	Pink Variegated	II
GA25	Scott Islands	Blue Green	II
GA26	Shenston Township Diabase	Black	II
GA27	Wonderland Lake Area	Pink-brown	I

These deposits probably have little potential for development.

GRANITE RECONNAISSANCE

Numerous large areas of granitoid and gabbroic rocks were examined and sampled on a reconnaissance basis to locate the 27 deposits described. Many of these sample sites have one or more adverse characterictics which eliminate them as significant dimension stone deposits. The most common problems are closely spaced jointing and/or sheeting and inconsistent colour and texture. Location and samples are described briefly in the appendix. Many of these granites proved to be quite attractive when polished. The deposits, while not suitable for dimension stone, might provide for the production of decorative objects. The more attractive sample sites have been marked with an asterisk in the appendix.

GRANITE EXPLORATION MODEL

The environments for the three types of crystalline igneous and metamorphic rock included under the term granite i.e. (a) grey and coloured, (b) variegated and (c) black will be discussed separately.

A. GREY AND COLOURED GRANITE

Northwestern Ontario is underlain by vast quantities of granitoid rocks. The majority of these rocks are too varied in texture, colour, and grain size or too highly jointed to be satisfactory as dimension stone. A large granitoid body or granite batholith complex is typically composed of a large number of more or less discrete rock phases which have developed over a period of time. The various phases usually have distinct colours and textures. Many of the earlier phases have developed by partial melting and/or assimilation of the host rock. This can result in a highly variable colour and texture and in large, partly digested inclusions of older rocks (knots, schlieren) in the granite. The fluid phase of the batholith can alter or replace solidified rock and is responsible for the many aplite and pegmatite dikes that cut some of the granitoid bodies. Late stage intrusive material tends to be more homogeneous and uniform in colour and texture and tends to have fewer pegmatite and aplite bodies. Uniform granite with few or no inclusions is found commonly in the core of a granitoid body which may be near the centre of a large batholith complex or in late-stage offshoots from the main granitoid mass. The granite deposits that are currently in production or that have been quarried in the past are all located in small, apparently late-stage bodies associated with larger batholithic complexes. These bodies are the most promising areas for future exploration.

The southern plutonic domain of the English River Subprovince (see Breaks et al. 1978) is dominated by large late-stage batholithic complexes, each of which has several significant occurrences of coloured granite. Small late-stage granite bodies associated with the batholithic complexes that intrude the Wabigoon Subprovince contain the Vermilion Bay and Ignace granite camps and several other significant occurrences. Small isolated granitoid stocks such as the Quarry Island (GQ5 deposit) stock in Lake of the Woods can contain granite suitable for dimension stone. Investigation of several of these bodies in addition to the Quarry Island Stock indicated reasonably uniform colour and textures but undesirable joint systems.

B. VARIEGATED GRANITE

This group includes two types: evenly layered gneisses and swirly nebulitic gneisses. The term gneiss characterizes layering developed in a rock subject to heat and directed pressure. The rock has recrystyallized and the minerals have segregated into layers of contrasting composition.

The evenly layered gneisses are much more limited in extent than the other type. They are commonly found in mylonite zones and around the margins of large granitoid bodies. The Quetico Fault mylonite zone and parts of the south margin of the English River Subprovince contain evenly layered gneissic rocks. In rocks marginal to large granitoid intrusive bodies the planar fabric tends to develop roughly parallel to the margin of the body.

The nebulitic gneisses are much more common. Significant mineral segregation that gives the rock a swirly nebulitic texture is common in granitoid rocks and granitized metasediments associated with batholithic complexes in the English River, Wabigoon and Quetico Subprovinces. Several examples have been found that resemble gneissic granitoid rocks quarried in Minnesota, e.g. the Austin Lake (GA1) deposit. The variable nature of these rocks makes finding a large uniform nebulitic gneiss deposit difficult; the colour in particular tends to change over short distances.

C. BLACK GRANITE

'Black granite' deposits occur in two types of mafic to ultramafic intrusive bodies, i.e. the Archean gabbro sills in the Wabigoon, Quetico and Uchi Subprovince rocks, and the Proterozoic diabase dikes that cut all the older rocks. The older intrusive rocks are frequently layered and contain sulphide mineralization resulting in limited amounts of usable stone. The layering is often on a fine (few centimetres) scale. Some of the bodies have undergone alteration resulting in development of chlorite and saussuritized feldspars. Extreme alteration can result in the development of talc or asbestos deposits particularly in the ultramafic rocks.

The major gabbro bodies (Mulcahy Lake, Nabish Lake, Tobacco Lake, Kakagi Lake, Bad Vermilion Lake and Grassy Portage Bay Sills) are Early Precambrian intrusions that show a layered structure. Sulphide mineralization is developed in these bodies to varying degrees. The deposits examined show alteration varying from very minor (Mulcahy Lake) to extensive (Bad Vermilion Lake). Other smaller unnamed gabbro bodies have similar problems of alteration and sulphide mineralization.

Jointing develops in these rocks in the same manner as it develops in the granitoid rocks. The search for usable black granite is best directed towards the larger gabbro and gabbroic anorthosite bodies rather than the small gabbros and ultramafic rocks. The large bodies were more resistant to deformation than the small bodies and tend to have phases with a minimum of alteration and sulphide mineralization.

Diabase dikes are much younger than the gabbros and have undergone negligible alteration. They carry small amounts of sulphide mineralization however and tend to have a variable grain size and texture. Although typically narrow (less than 30 to 100 m) the dikes have a long strike length allowing for occasional bodies of uniform texture and mineralogy.

EXPLORATION POTENTIAL

The greatest potential for granite deposits in northwestern Ontario lies with the grey or coloured and variegated granites. The southern part of the English River Subprovince is a major area for coloured granite occurrences. Grey and coloured granites form part of several batholith complexes. Grey is found particularly in the Dryden-Ignace area. Grey and coloured granites are the only types that have been produced in the area. Variegated granite and black granite is available in several locations but has not been quarried; the known deposits have not yet been evaluated by the industry. The potential for black granite is highest in the southern part of the Mulcahy Lake Sill.

GRANITE QUARRIES AND PROSPECTS

GQ1 BANNERMAN AND HORNE QUARRY

Commodity: Granite

Colour: Grey

Status: Past producer

Fracture: Joints spaced 0.6 to 2 m and wider, sheeting up to 2.5 m

Texture: Massive to weakly gneissic

Location: Ignace Township, District of Kenora.
NTS: 52G/5NE
Latitude: 49°26'11" Longitude: 91°41'02"
UTM: 595400 m E, 5476600 m N Zone 15.

Access: The quarries are located between the CPR right of way and the Trans Canada Pipeline. They are best reached from the Pipeline road.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Indian Lake Batholith.

Previous Geological Work: The area has been mapped by Tanton (1938). The quarries were described by Carr (1955) and Hewitt (1964); a description was also been included by Vos et al. (1982). The description below is from Hewitt (1964).

"The [Canadian Pacific Railway Company] quarry lies 100 yards north of the Canadian Pacific Railway line, 1.6 miles northwest of Ignace station. It was worked by the Canadian Pacific Railway Company for bridge foundations during construction of the railroad. The face is 200 feet long with a maximum height of 16 feet. It is cut into the east side of a low granite outcrop. The rock is a faintly gneissic, medium-grained pale pink and grey biotite granite striking N.70°E. and dipping 45°S. Both colour and texture are locally variable and streaks of a dark rock are sometimes included. Six sheets from 18 inches to 8 feet thick are present in the face. The sheeting dips 10°N. Jointing is well developed at N.70°W. at intervals of 6 inches to 29 feet, commonly 4 to 6 feet. Jointing at N.40°E. is widely spaced. Quarrying of the large blocks appears to have been accomplished with black powder in widely spaced drill holes the full depth of the sheet. Physical properties of the Ignace grey granite are as follows: maximum compressive strength, 26375 p.s.i., minimum compressive strength, 15375 p.s.i., average compressive strength, 20875 p.s.i., absorption, 0.20 percent; bulk specific gravity, 2.62; weight per cubic foot, 163 pounds; abrasive hardness, 66.8.

"[Quarry No. 2] is about 200 yards north of the railway 1.8 miles northwest of Ignace station. It was served by a railway spur of which only the bed remains. A great many paving blocks and curb stones were apparently produced in addition to larger blocks. A number of shallow cuts have been made over an area of several acres in a low outcrop of the white granite. The rock is massive and medium-grained with rare diffuse patches of coarser texture up to several feet in diameter. The sheeting is massive and horizontal at the east end of the workings and large blocks were taken from an 8-foot working face. At the west end, sheets 6 to 24 inches thick are common. Scattered workings in the area were largely for paving and curb stones. Jointing is widely spaced in the same two directions, N.70°W. and N.30°E. Plug and feather quarrying was used."

Geology: The rock exposed in the quarry openings is massive to weakly gneissic, light grey to pale pink, biotite granite. Joints spaced 0.6 to 2 m apart are oriented 030° and 120°. The colour variations are primarily due to variations in hematite content. Biotite content is approximately 5%. The granite polishes well.

History: The quarries were opened by the Canadian Pacific Railway in 1888 for bridge piers and foundation stone (Barr and Dyck 1979). The deposit was leased by W. Horne in 1912 for the production of paving blocks and building stone. Operations were terminated in 1915.

References

NTS Map 52G/5
Barr and Dyck (1979)
Carr (1955)
Hewitt (1964)
Tanton (1938)
Vos et al. (1982)

GQ2 CNR WHITE QUARRY

Commodity: Crushed Granite

Colour: Grey to pink

Status: Intermittent producer

Fracture: Close spaced joints and sheeting

Texture: Massive to nebulitic gneissic

Location: North-central Rice Township, Kenora District. Adjacent to the CNR, 4.3 km east of the Manitoba border.

NTS: 52E/14NE
Latitude: 49°53′45″ Longitude: 95°05′39″
UTM: 349600 m E, 5528900 m N, Zone 15.

Access: The deposit is accessible only by rail.

DESCRIPTION

Geological Setting: The deposit is in dioritic to granodioritic rocks near the north contact of the Pelican Pouch Lake Stock.

Previous Geological Work: The area was mapped by Breaks et al. (1975). A brief description appears in the Kenora Resident Geologists Files and was reproduced by Vos et al. (1982):

"Rock is granitic and is highly variable throughout the pit area. Most common is a grey to pink, medium grained granodiorite with varying amounts of biotite. Some areas have a very clotty appearance due to coarse biotite. Coarse-grained pink pegmatite is also common."

Geology: The quarry is in light grey to pink, hornblende-biotite granitoid rock which is intruded by numerous pink pegmatite and aplite dikes. Xenoliths are common, often showing agmatite development. The mafic mineral content of the rock is highly variable up to 30%; biotite is predominant. Gneissosity is developed as swirly segregations of mafic minerals rather than even layering. The pegmatites have variable orientation but most trend west to northwest and dip moderately northeastward. The dikes show evidence of assimilation of the host rock. Hematite staining is common. Pegmatite makes up about 15% of the rock. The rock is extensively fractured due to blasting. A major joint set is oriented about 135°/90 and another set is perpendicular to this. Sheeting varies from 0.3 to 2 m with most 0.3 to 0.6 m.

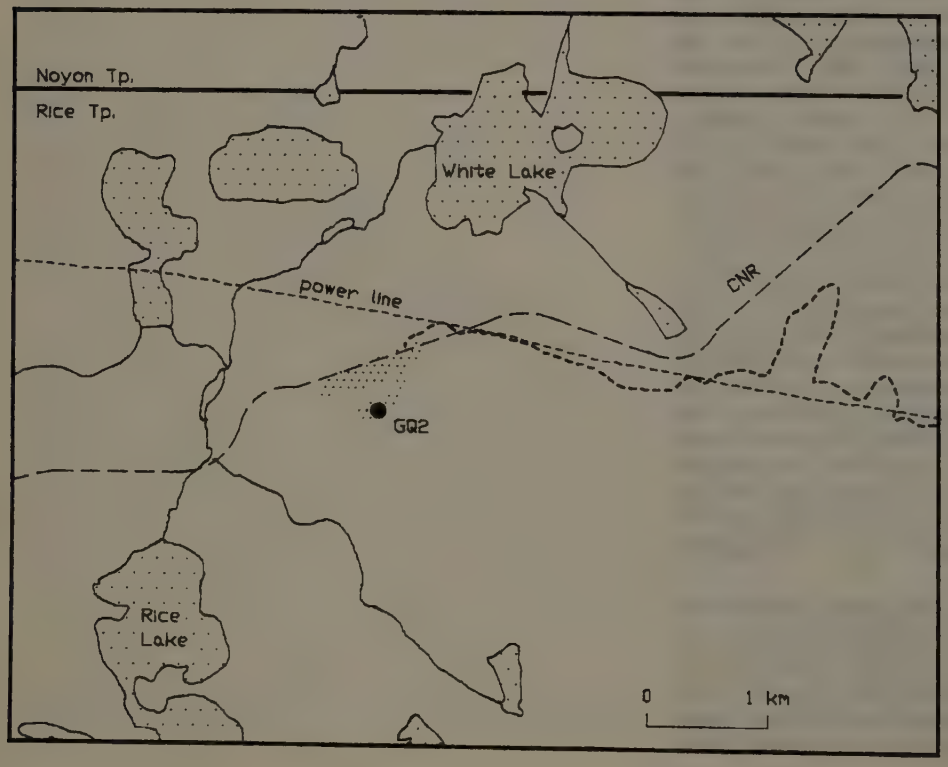
Samples

82-7, 82-8

History: The quarry was opened about 1974 to obtain crushed stone for track ballast. The quarry is operated for short periods and the crushed stone is stockpiled for use as needed.

References

NTS 52E/14
Breaks et al. (1975)
Resident Geologist Files, Ontario Ministry of Northern Development and Mines, Kenora
Vos et al. (1982)



Location Map GQ2
CNR White Quarry.

GQ3 BONHEUR QUARRY

Commodity: Crushed Granite

Colour: Grey

Status: Past producer

Fracture: Wide spaced

Texture: Gneissic

Location: Lot 10 concession III, Burk Township, District of Kenora.

NTS: 52G/6SW

Latitude: 49°18′58″ Longitude: 91°19′54″

UTM: 621300 m E, 5463700 mN, Zone 15.

Access: The workings are on top of a hill reached by a road extending 1.5 km north from Highway 17 at a point 1.9 km east of the west boundary of Burke Township.

DESCRIPTION

Previous Geological Work: The area was mapped by Tanton (1938). The quarry has been described by Tanton (1938) and was mentioned by Carr (1955) and Vos et al. (1982). The following is from Tanton (1938):

"The Bonheur quarry is on the southern side of a hill one-quarter mile northwest of Bonheur Station. Prior to 1932 the quarry was owned and operated by the Canadian Pacific Railway for the production of rock ballast. Excavations were made at three adjacent localities at different elevations; the lowest of these measures approximately 100 feet long, 66 feet wide, and 30 feet deep; adjoining it at a somewhat higher elevation on the northwest is an excavation 130 feet square and 30 feet deep; and above and west of this is one 200 feet long, 160 feet wide, and 15 feet deep. After 1932 the operation ceased; the railway siding, power house, and two rotary rock crushers were dismantled; in 1937 there were no buildings on the property.

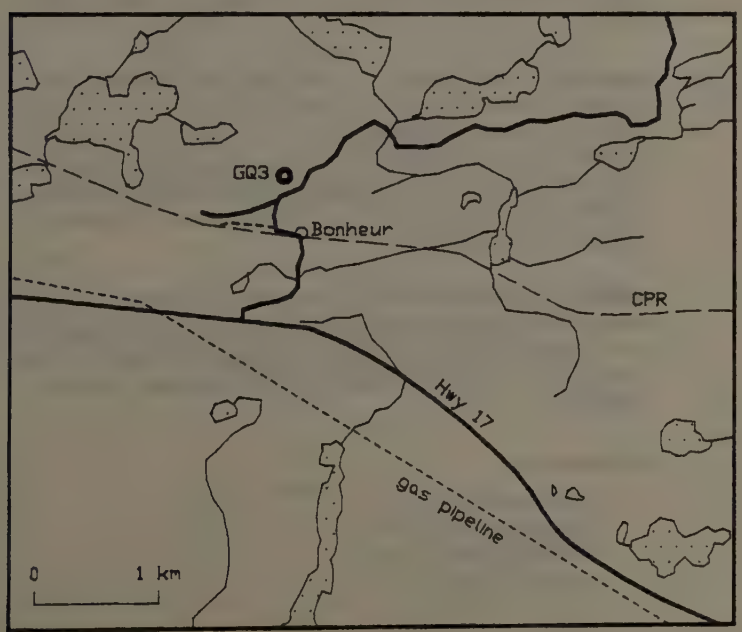
"This property is underlain by granite in which there are inclusions of Keewatin schists. The hill on which the quarry was opened is for the most part covered with a thin deposit of till which, adjacent to the workings, is about 2 feet thick. The rock in the quarry consists for the most part of grey, hornblende granite-gneiss; irregularly distributed through it and prominently exposed in the northern part of the workings are platy inclusions of hornblende schist, which locally contain zones rich in garnet. The foliation of these rocks strikes east-northeast and dips 75 degrees south. This assemblage is cut by red pegmatite dikes up to a few inches in width; some of the dikes are parallel to the foliation and others horizontal."

Geology: The rock is medium-grained gneissic grey granite cut by numerous pink granitic pegmatite dikes. The foliation varies over short distances from weak to strong gneissic layering. It is variable in trend but is predominantly 095°/75°S. The overgrown condition of the workings and fractures due to blasting obscure jointing patterns, but they appear to be wide spaced. Overburden is less than 1 m thick but obscures the rock close to the quarry openings.

Samples

82-94

History: The quarry was operated prior to 1932 by the Canadian Pacific Railway for ballast.



Location Map GQ3
CPR Bonheur Quarry.

References

NTS Map 52G/6
Tanton (1938)
Carr (1955)
Vos et al. (1982)

GQ4 CPR HAWK LAKE QUARRY

Commodity: Crushed Granite

Colour: Grey

Status: Producer

Fracture: Sheeting spaced 0.5 m

Texture: Gneissic

Location: Southwest MacNicol Township, District of Kenora. 40 km east of Kenora. The centre of the quarry was used as a location point.

NTS: 52F/13SW

Latitude: 49°48′35″ Longitude: 93°59′32″

UTM: 428600 m E, 5517700 m N, Zone 15.

Access: The quarry is serviced by a siding from the CPR station at Hawk Lake and a road that extends south from Highway 17.

DESCRIPTION

Geological Setting: The quarry is developed in quartz monzonite and granodiorite of the Feist Lake Pluton which is part of the Dryberry Batholith.

Previous Geological Work: The area was mapped by Pryslak (1968, 1976). The quarry was briefly mentioned by Lawson et al. (1897), Pryslak (1976) and Vos et al. (1982). There is no description of the deposit. The following is from Lawson et al.:

"A little to the east of Hawk Lake station, a quarry has been opened in a grey gneiss for building stone, and the material obtained there is said by practical men to be the best working and quarrying stone along the line of the railway. It has been used chiefly for foundation purposes, but would make a very serviceable stone for the walls of ordinary buildings."

Geology: The rock is light grey to pinkish grey biotite granite. It has a gneissosity due to biotite alignment but this varies about the quarry. There are numerous pink pegmatite dikes of variable orientation. The rock is extensively fractured due to blasting. Sheeting is about 0.5 m and is consistent the entire depth of the quarry.

History: The quarry was originally opened for dimension stone prior to 1897. In 1929 it was reopened for crushed stone for use as track ballast by the Canadian Pacific Railway. It has operated intermittently since.

References

NTS Map 52F/13
Lawson et al. (1897)
Pryslak (1968, 1976)
Vos et al. (1982)

GQ5 CPR QUARRY ISLAND

Commodity: Granite

Colour: Grey

Status: Past producer

Fracture: Joints spaced 1 to 1.5 m, sheeting 1.3 to 3 m

Texture: Weakly foliated

Location: Surrey (Quarry) Island, Lake of the Woods, Kenora District

NTS: 52E/9NW

Latitude: 49°42′14″ Longitude: 94°24′16″

UTM: 398750 m E, 5506350 m N, Zone 15.

Access: The deposit is reached by boat from Kenora.

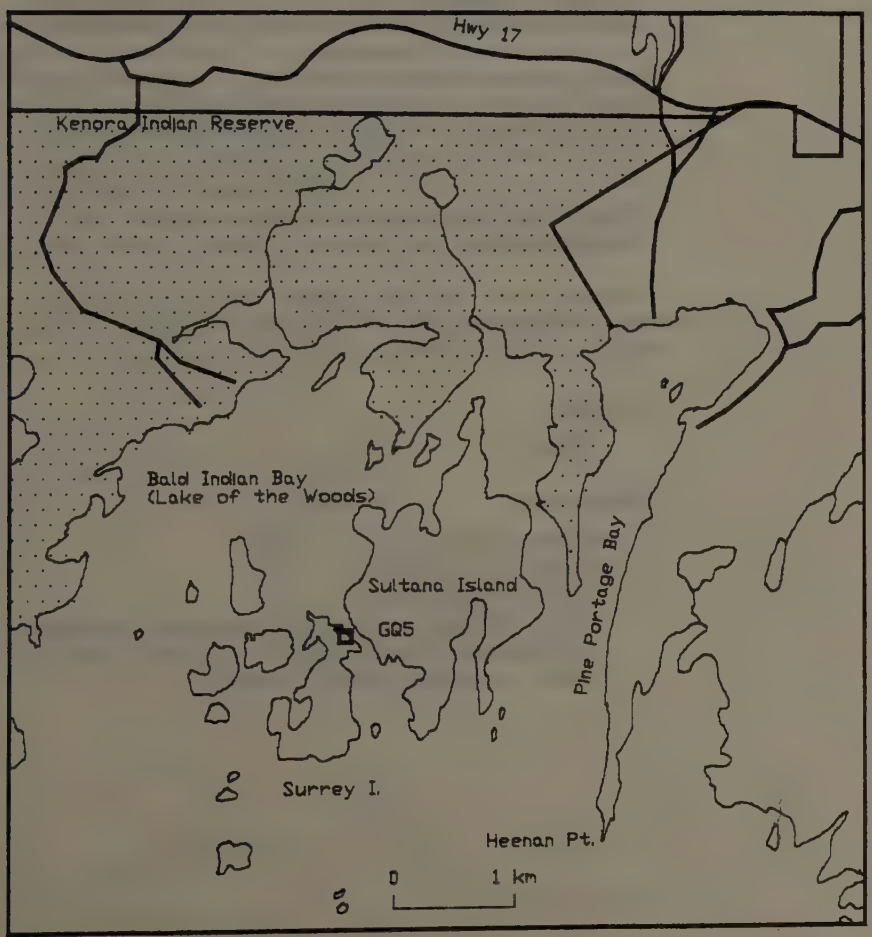
DESCRIPTION

Geological Setting: The area is underlain by metavolcanics intruded by a small granitoid body.

Previous Geological Work: The area was mapped by Lawson (1886) and Suffel (1931). The area was described by Bruce (1925) in conjunction with nearby gold deposits. The only mention of the quarry is in Lawson (1886) and Lawson et al. (1897). The following is from Lawson (1886):

"A boss of coarse-grained, grey, granitoid gneiss, considerably crushed and altered projects through the schists on Quarry Island and on the opposite shore. The vein on which the Sultana Mine is situated, occurs in this rock, and a number of other gold locations have been taken up in its neighbourhood. Small veins of quartz carrying molybdenite traverse the gneiss in places, and larger veins of molybdenite have been found in the country between Quarry island and Rossland. A quarry has been opened on the island for material for bridge piers, and the gneiss or 'granite,' as it is called, is found to furnish excellent blocks for heavy masonry."

Geology: The quarry is in a grey medium-grained biotite granitoid rock, which is massive in the vicinity of the workings. Predominant joint sets are oriented 000-020°/85°W and 100/85°N. The joints are spaced approximately 1 to 1.5 m apart. Sheeting varies from



Location Map GQ5
CPR Quarry Island.

1.3 m at the west end of the workings to 3 m at the east end of the workings. The quarry was developed along a south facing ridge for a distance of approximately 30 m. The rock was often removed using the joints to outline the blocks. Modal analysis of a sample taken from the old workings indicates that the rock has a granodiorite composition. The material sampled has a relatively high biotite content, some of which plucked out during polishing.

Samples

82-11

History: The quarry was opened during construction of the CPR to obtain stone for bridge piers.

References

NTS Map 52E/9
Bruce (1925)
Lawson (1886)
Lawson et al. (1897)
Suffel (1931)

GQ6 GRINDSTONE LAKE QUARRY

Commodity: Granite (as fill and track ballast)

Colour: Pink

Status: Past producer

Fracture: Joints spaced 1 m and greater, sheeting is irregular.

Texture: Gneissic

Location: Lot 3 concession VI, Redditt Township, District of Kenora

NTS: 52E/16NW

Latitude: 49°59′18″ Longitude: 94°21′56″

UTM: 402100 m E, 5538000 m N, Zone 15.

Access: The quarry is on the north side in the CNR right of way 2240 m east of Redditt.

DESCRIPTION

Geological Setting: The area is underlain by massive to porphyritic granodiorite of the Lount Lake Batholith Complex.

Previous Geological Work: The area has been mapped by Breaks et al. (1975, 1978) at a reconnaissance scale. There is no description of the deposit.

Geology: The rock is very similar to that of the Norlicka Minerals (GQ9) deposit. Major joint directions are 050°/60°S (the predominant set) and 170°/90°. They are spaced approximately 1 m apart or more. The granite is cut by numerous pegmatite dikes. Sheeting of irregular thickness dips 10 to 15° to the northeast.

History: The rock was quarried for railway construction, probably rock fill. This quarry is typical of the small quarries opened during railway construction.

Samples

82-212

References

NTS Map 52E/16
Breaks et al. (1975e)
Breaks et al. (1978)
Ontario Ministry of Natural Resources, Surveys and Mapping Branch Plan No. M2026, Area of Deacon Lake and Redditt Township.

GQ7 GUMMESON PROSPECT

Commodity: Granite

Colour: Grey

Status: Prospect

Fracture: Joints are spaced 2 to 6 m, sheeting 1 to 3 m.

Texture: Equigranular, massive

Location: Bradshaw Township, District of Kenora
NTS: 52G/5NW
Latitude: 49°28′45″ Longitude: 91°48′49″
UTM: 585950 m E, 5481200 m N, Zone 15.

Access: The quarry workings are adjacent to the Mameigwess Lake Road, 2.9 km north of Highway 17.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Indian Lake Batholith.

Previous Geological Work: The area was mapped by Tanton (1938), and the quarry was described by him as follows:

"On mining claim K3702, one mile north of Butler Station, development work has been carried on since 1935 by the owner, A. Gummeson of Butler, with a view to opening a quarry. On a hill that rises about 40 feet above the adjacent lowland a considerable amount of stripping has been done and test pits have been sunk at two places. Fifty cubic feet of stone valued at $50 was sold in 1937.

"The property is underlain by massive, medium-grained biotite granite, exhibiting pale grey and pink varieties that merge into one another. At test pits the rock consists chiefly of pale grey granite that is traversed by a system of joints dipping at very low angles toward the north."

Geology: The rock is exposed in a southwest-trending ridge with two small quarry openings in it. The rock is fine- to medium-grained, massive, light grey biotite granite. Vertical joints oriented 060° and 180-200° are spaced 2 to 6 m apart. Sheeting varies from 1 m at the east pit to 3 m at the west pit. The colour is light grey becoming pale pink to the north. The granite exposed in the workings is all light grey. There are no obvious knots or inclusions although minor quartz veins occur in a few places.

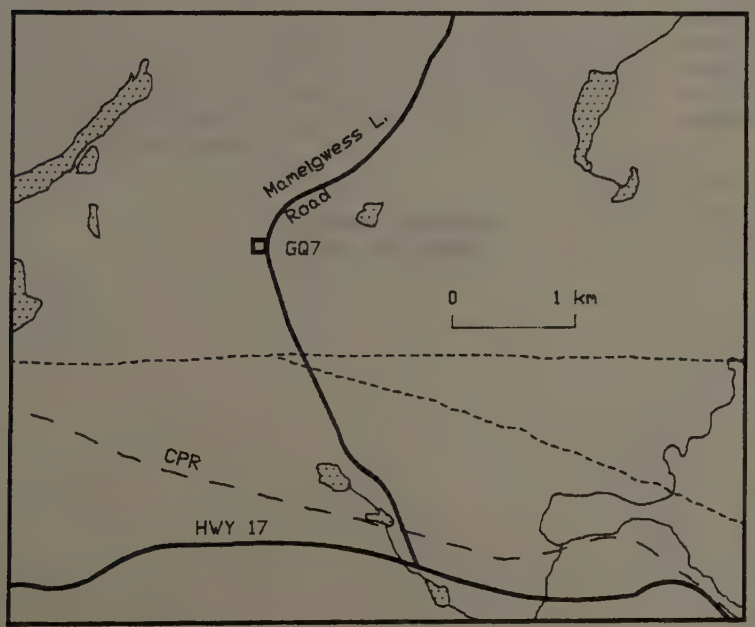
Samples

82-95, 82-105

History: The deposit was opened by A. Gummeson in 1935 and developed until 1937.

References

NTS Map 52G/5
Tanton (1938)



Location Map GQ7
Gummeson Prospect.

GQ8 NELSON GRANITE QUARRY

Commodity: Granite

Colour: Pink

Status: Producer

Fracture: Wide spaced

Texture: Massive to slightly layered

Location: Docker Township, District of Kenora
NTS: 52F/14SW
Latitude: 49°29′26″ Longitude: 93°29′52″
UTM: 465150 m E, 5519000 m N, Zone 15.

Access: The quarry is located on the south side of Highway 17 9 km west of the town of Vermilion Bay. A short road connects with the highway.

DESCRIPTION

Geological Setting: The quarry was opened in a small late granitoid plug in the border area of the Dryberry Dome.

Previous Geological Work: The area was mapped by Pryslak (1969, 1976) and included in a reconnaissance scale map by Breaks et al. (1976b, 1978). There is no published description of the quarry although it was mentioned in Vos et al. (1982).

Geology: The rock is homogeneous, massive, medium-grained pink granite. The body is egg shaped in plan, 2.8 by 1.8 km. This is the same deposit that the Granite Quarriers (GQI) Inc. quarry is located in and the rock is identical. The quarry is located near the centre of the body. The rock is very uniform in colour. A few minor quartz veins up to 2 cm wide are present. The rock has very few fractures. Vertical joints are oriented 050°/90° and 155°/90°; these are widely spaced and in many parts of the outcrop are not evident. Sheeting is thick. Initial drilling indicated horizontal fractures at approximately 7.6 m to 13.7 m (Kenora Resident Geologist's Files, Ontario Ministry of Northern Development and Mines). Quarrying operations exposed a first sheet at 2 to 2.5 m. The rock is identical to the Granite Quarriers deposit. The same sheeting and layering are present although the sheets are more nearly horizontal.

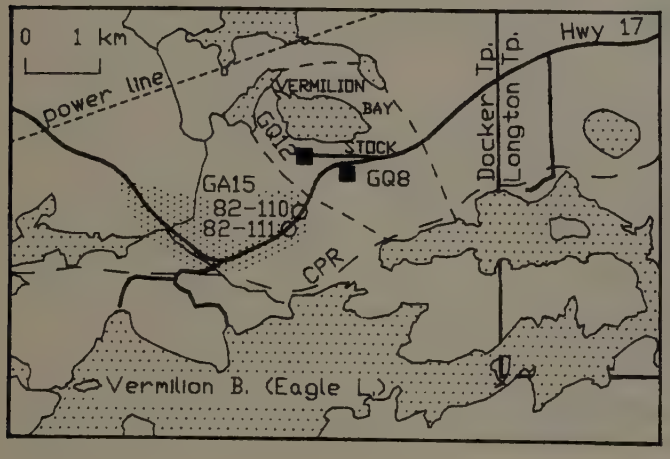
Samples

82-117

History: The quarry was opened by Nelson Granite Ltd. in 1981 and currently produces granite for monumental and building use.

References

NTS Map 52F/14
Breaks et al. (1976b; 1978)
Pryslak (1969, 1976)
Vos et al. (1982)
Resident Geologist's files, Ontario Ministry of Northern Development and Mines, Kenora.



Location Map GQ8
Nelson Granite.

GQ9 NORLICKA MINERALS PROSPECT

Commodity: Granite

Colour: Pink

Status: Prospect

Fracture: Joints spaced 2 to 6 m but are present in 4 sets. Sheeting is not exposed.

Texture: Massive to nebulitic gneissic

Location: Lot 2, concession VI, Redditt Township, District of Kenora

NTS: 52E/16NW

Latitude: 49°59′25′ Longitude: 94°21′33″

UTM: 402550 m E, 5538200 m N, Zone 15.

Access: The workings are located 200 m north of the CNR right of way, 2.8 km east of Redditt Station.

DESCRIPTION

Geological Setting: The area is underlain by porphyritic granodiorite of the Lount Lake Batholith complex.

Previous Geological Work: The area has been mapped by Breaks et al. (1975e, 1978) at a reconnaissance scale. There is no description of the deposit.

Geology: The rock is a massive to nebulitic gneissic, pink coloured, biotite granite exposed in a large hillside north of the CNR. There are numerous pegmatite patches up to several metres long. The colour is variable from light to deep pink, grain size varies from medium to fine grained. Major joint sets are oriented 045°/80°S, 095°/90°, 125°/90° and 160°/90°. The joint spacing varies from 2 m at the base of the hill near the workings to 6 m on top of the hill. The workings consist of a small prospect pit in the southwest side of the outcrop area. Several small blocks have been removed by plug and feather. The granite bears some resemblance to the Rainbow granite quarried in Minnesota.

Samples

82-211

History: Nothing is recorded about the history or operator of this deposit; quarry permit records show that a company called Norlicka Minerals held a quarry permit covering this area in 1969. The company is now defunct.

References

NTS Map 52E/16
Breaks et al. (1975e; 1978)
Ontario Ministry of Natural Resources, Surveys and Mapping Branch, Plan No. M2026, Area of Deacon Lake and Redditt Township.

GQ10 ONTARIO GRANITE COMPANY – FARLANE QUARRY

Commodity: Granite

Colour: Pink to pink-brown

Status: Past producer

Fracture: Joints spaced 4.5 to 6 m, sheeting to 3 m

Texture: Massive, equigranular and porphyritic

Location: Adjacent to the CNR main line, 800 m west of Farlane Station

NTS: 52L/1SE

Latitude: 50°00'39" Longitude: 94°12'47"

UTM: 413100 m E, 5540400 m N, Zone 15.

Access: The quarry is accessible by rail.

DESCRIPTION

Geological Setting: The quarry was developed in granitoid rocks of the Lount Lake Batholith, mapped as biotite granodiorite by Breaks et al. (1975f).

Previous Geological Work: The quarry was described by Carr (1955) (reproduced in Hewitt (1964)) and Cole (in Carr 1955). The following is from Carr:

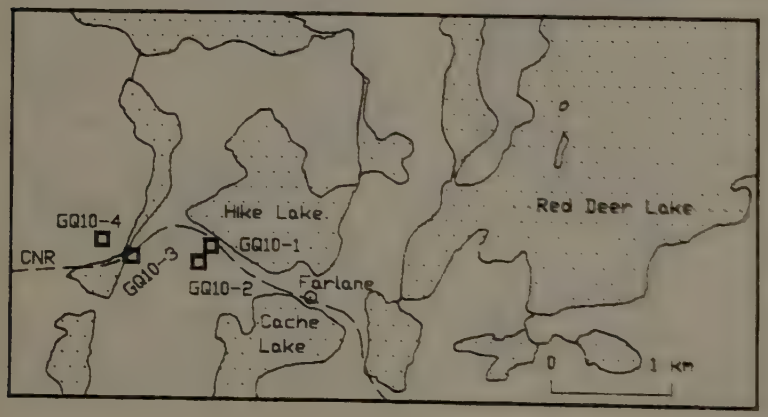
"A number of years ago quarrying operations were carried on adjacent to the Canadian National Railway a mile west of Farlane, a station 10 miles east of Redditt and 139 miles by rail east of Winnipeg. The stone, a red granite of Archean (Early Precambrian) age, was produced by the Ontario Granite Company, Limited. The bluff in which the opening was made rises about 55 to 60 feet above the level of the railway; the stone was taken out in benches. The sheeting is fairly massive, but varies in places, and has a general dip of 10 degrees to the west. The rift follows the sheeting and the grain is vertical, paralleling the main joints which strike N13°W. Medium sized blocks can be obtained. The stone is a fine grained, even-textured, light pink biotite granite with only a faint gneissoid structure. The colour of the stone is due to the red feldspars, but with the large proportion of quartz, and the biotite present only sparingly, the general colour of the stone is quite light. The rock takes a beautiful polish but there is not much contrast between the different finishes. It was used for monumental dies and should be suitable for building stone."

Geology: The locations of the various quarry openings are shown on the location map. Of the four openings, No. 1 and No. 2 were quarried for monumental and/or building stone and No. 3 and No. 4 for rock fill for railway construction. The remains of a plant and several polished granite blocks exist at quarry one. The description in Carr (1955) applies to Quarry No. 1 only. Three types of granitoid rock are present in the area: a fine- to medium-grained pink material produced as monuments, a coarse-grained pink material with lath shaped feldspar crystals up to 2 cm long and a medium-grained purple-brown coloured rock produced in quarries 3 and 4.

Quarry No. 1: The rock is fine to medium grained, massive to very weakly foliated. The colour is uniform pink. Sheeting from 0.3 to 3 m thick is developed in the deposit and is particularly evident in the railway cut adjacent to the quarry. The blocks were cut by plug and feather. The overgrown state of the working obscures most of the details of the rock.

Quarry No. 2: The upper part of the hill comprises coarse pink granite with large feldspar laths intruded by a few narrow pegmatite dikes. The fine-grained granite of quarry No. 1 is present along the north edge of the hill. It appears to be a slightly later phase than the coarse granite. Vertical joints oriented 000°±10° and 090° to 125° occur at wide intervals (4.5 to 6 m). Several pegmatite dikes and quartz veins have developed approximately parallel to the jointing. Gneissic schlieren occur near the west limit of the rock exposure. In these schlieren, a weak gneissosity trends 105°. The coarse material was quarried as a large number of waste blocks are present but the actual opening was not located. The coarse granite has a distinct brown tint.

Quarries No. 3 and No. 4: These quarries were probably developed for rock fill and were not part of the Ontario Granite Company operation. The rock is fine- to medium-grained, massive, biotite granite with a distinct brown-purple colour. Blue quartz accounts for



Location Map GQ10
Ontario Granite Co. - Farlane Quarry.

some of this. Sheeting similar to that of the other quarries is evident. Joints 160°/90° are developed here. The quarry openings are in the hillside and are quite shallow.

Samples

82-215 (quarry No. 3), 82-216 (quarry No. 1)

History: Quarries No. 1 and No. 2 were opened by the Ontario Granite Company during the 1920s for the production of monuments. A plant was operated on the site. Quarries No. 3 and No. 4 were probably opened for rock fill during railway construction.

References

NTS Map 52L/1
Breaks et al. (1975f)
Carr (1955)

GQ11 WM. HORNE GRANITE COMPANY – BUTLER STATION QUARRY

Commodity: Granite

Colour: Grey

Status: Past producer

Fracture: Joints spaced up to 5 m

Texture: Massive equigranular

Location: Bradshaw Township, District of Kenora
NTS: 52G/5NW
Latitude: 49°27′40″ Longitude: 91°48′59″
UTM: 585800 m E, 547920 m N, Zone 15.

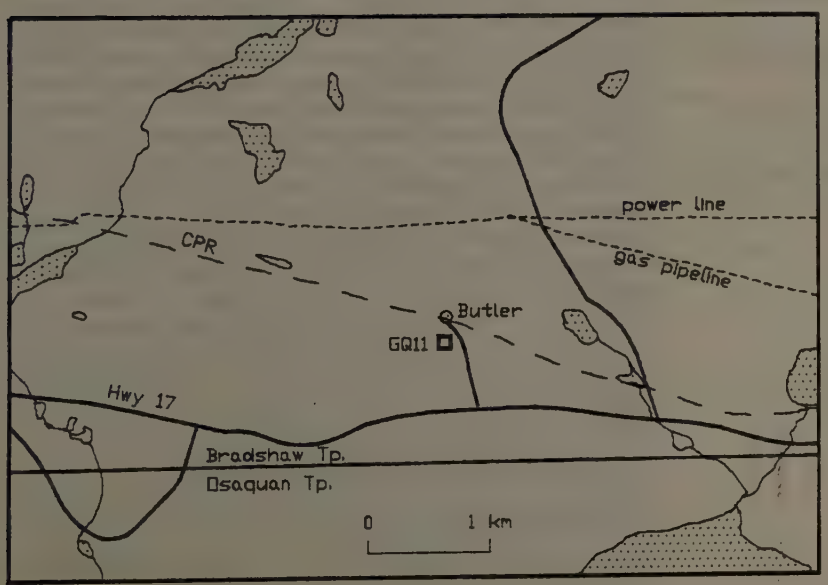
Access: The quarries are adjacent to the CPR right of way.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Indian Lake Batholith.

Previous Geological Work: The area was mapped by Tanton (1938). The quarry was described by Tanton (1938), Carr (1955) and Hewitt (1964). It is listed in the National Mineral Inventory and is included in Vos et al. (1982). The following description is taken from Hewitt (1964):

"Four quarries were observed on a low wooded ridge over a distance of 1/2 mile, all between 100 and 300 yards south of the railway. The most westerly quarry lies 200 yards north of the highway and can be seen from the road across a shallow sandpit. The quarry measures 60 feet by 150 feet and has a maximum depth of 4 feet. The rock is white, massive and medium-grained. Rare small patch pegmatites were noticed beyond the quarry area. Sheeting is horizontal, somewhat tapering, and thin. Thicknesses



Location Map GQ11
Wm. Horne Granite Co. - Butler Sta. Quarry.

of the two sheets being worked varies from 15 to 40 inches. Jointing at N.40°E. is spaced at 4 to 8 feet. Jointing at N.70°W. is widely spaced. The planes are commonly marked by a mottled brown and white alteration. Two small timber derricks and a number of freshly cut blocks attest to quarrying activity within the last 10 years. Older quarries to the east worked sheets from 1 to 4 feet thick to depths of 8 to 12 feet. Blocks were shipped by rail from the nearby Butler siding. Physical properties of the Butler grey granite are as follows: compressive strength, 26125 p.s.i., absorption, 0.28 percent; bulk specific gravity, 2.61; weight per cubic foot, 163 pounds; abrasive hardness, 58.0."

Geology: The rock is massive, light grey to white, biotite granite (approximately 5% biotite). There are local variations in grain size and resultant colour variations. There are a few minor patch pegmatites. A very weak foliation trends north-northwest. The predominant joint set in the granite is oriented 110° with lesser sets at 045° and 070°. The former are wide spaced (5 m or more) while the latter are 1 to 2 m apart. There are no obvious knots or inclusions in the granite but there are occasional rusty weathering spots on the weathered surface. Some of the waste blocks have a 2 to 5 mm rind of slightly rusty coloured material. The rusty colour is associated with the biotite. The rock polishes well with no plucking of the biotite. Modal analysis of the rock indicates it is a granite.

Samples

82-118

History: The quarry was opened in 1915 and was operated by the Wm. Horne Granite Company until 1952 with a break from 1943 to 1946. Granite was produced as paving stones and rough blocks for monuments and building stone. The steps for the Manitoba Legislature building were produced from this quarry. Barr and Dyck (1979) briefly described the operations of the quarry.

References

NTS Map 52G/5
Barr and Dyck (1979)
Carr (1955)
Hewitt (1964)
Tanton (1938)
Vos et al. (1982)

GQ12 GRANITE QUARRIERS (GQI) INC. (UNIVERSAL GRANITE CENTRE)

Commodity: Granite

Colour: Pink

Status: Producer

Fracture: Wide spaced joints (6 m), sheeting 3 m

Texture: Equigranular

Location: Docker Township, District of Kenora. See location map GQ8.

NTS: 52F/13SE
Latitude: 49°49′58″ Longitude: 93°30′16″
UTM: 463750 m E, 5519350 m N, Zone 15.

Access: The quarry is located on the north side of Highway 17 between the Trans Canada Pipeline and Aaron Lake. A short road connects the quarry with the highway.

DESCRIPTION

Geological Setting: The quarry was opened in a small late granitoid plug in the border area of the Dryberry Dome.

Previous Geological Work: The area was mapped by Pryslak (1969, 1976) and included in reconnaissance scale mapping by Breaks et al. (1975f, 1978). The quarry was described by Carr (1955), Guillet (in Hewitt 1964); Pryslak (1976) repeated Guillet's description. The deposit is mentioned in Vos et al. (1982) Samples from this deposit were examined by Mattinson (1952). Excerpts from Guillet follow:

"The rock is a uniform moderate orange-pink, medium-grained, biotite granite. It is typically granitic in texture and is composed of orange-pink feldspar and white to colourless quartz speckled with black mica. A faint gneissosity is apparent in the quarry face but is not readily seen in the hand specimen. It is due to slight relative enrichments of the three minerals in diffuse alternating bands an inch or so thick striking east and dipping about 12°N. Sheeting in the granite is parallel to the gneissosity and is frequently marked by a pegmatitic layer, 1 to 2 inches thick, of quartz and feldspar. Small pegmatitic patches within the mass of the rock are not sufficiently frequent to be deleterious. Staining was not observed on any of the rock surfaces and quartz segregations are absent. The thickness of sheets in the quarry area measured from top to bottom are 2, 2, 3, 4, 2, 12, 10 and 4 feet. The two thick sheets form the major producing zone. Jointing is poorly developed in one direction — N.45°E., and the interval is wide. The jointing is usually tight, almost healed, and is often marked by a 1/4-inch bleached zone. The rock breaks well in directions parallel to the jointing and sheeting, and "plug and feather", and black power blasting techniques, are used in these directions. The third direction is difficult and requires channeling methods to insure a square cut."

Geology: The rock was classified as quartz monzonite by Mattinson (1952) and granite by Pryslak (1976). A modal analysis from Mattinson (1952) plots as granite in the Streckeisen (1976) classification. The rock is pink, fine- to medium-grained massive biotite granite. The granite plots very close to the granite-quartz monzonite field boundary on the Streckeisen diagram. There is a slight layering parallel to the sheeting. This is evidenced by a slight lightening of the pink colour of the feldspar. Biotite is roughly aligned parallel to these layers. This effect is present in several places in the deposit. When present the layering forms lines 2 cm apart on the surface. Microcline crystals up to 1 cm form dark pink phenocryst-like forms although the texture is not porphyritic.

Samples

82-117

History: The quarry was opened in 1948 by the Vermilion Pink Granite Company. It was reopened in 1954 by the Scotstown Granite Company and operated until 1960. It was purchased by the Universal Granite Company in 1971; major production began in 1976, the company then known as Universal Granite Centre (1976) Ltd. In 1984 the quarry was sold to a group of Quebec granite companies known as Granite Quarriers (GQI) Inc.

References

NTS Map 52F/13
Breaks et al. (1975f)
Carr (1955)
Guillet (in Hewitt 1964, p.44-47)
Mattinson (1952)
Pryslak (1969, 1976)
Vos et al. (1982)

GQ13 CPR QUARRY ISLAND (KEEWATIN)

Commodity: Granite

Colour: Grey

Status: Past producer

Fracture: Joint spacing 2 m, sheeting 1 to 2 m

Texture: Foliated, megacrystic

Location: Town of Keewatin, District of Kenora. The workings are on the north side of Quarry Island in Darlington Bay north of Keewatin.

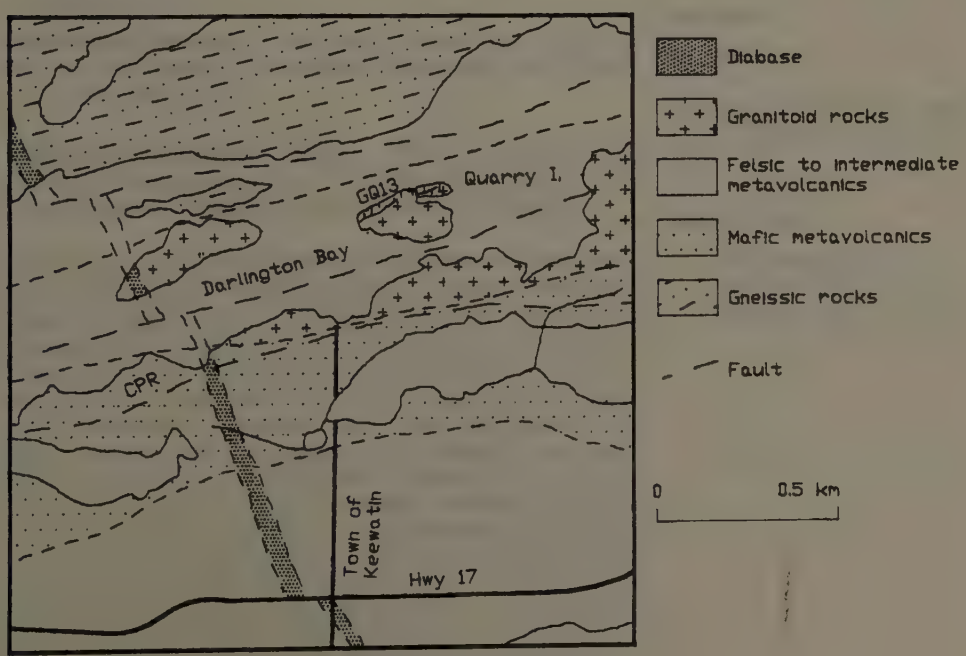
NTS: 52E/15SE
Latitude: 49°46′01″ Longitude: 94°33′33″
UTM: 387700 m E, 5513600 m N, Zone 15

Access: The workings are accessible only from Darlington Bay.

DESCRIPTION

Geological Setting: The area is underlain by foliated porphyritic trondhjemite along the margin of the English River Subprovince.

Previous Geological Work: The area was mapped by Lawson (1886), Lawson et al. (1897) Gower (1978) and King (1983a) The Quarry was mentioned by Lawson et al. (1897) as follows: "The gneiss of the south end of Darlington Bay has been used for building piers of the bridges between Rat Portage and Keewatin."



***Location Map GQ13** — Quarry Island (Keewatin).*

Geology: The rock is a grey to dark grey-coloured strongly foliated 'granite' with prominent pink feldspar megacrysts. There is 3 to 10 mm layering parallel to the foliation. Amphibolite inclusions stretched parallel to the foliation are common. The foliation trends 085° to 090°/76°N. The rock splits well along this foliation. There are joint like fractures parallel to the foliation spaced about 2 m apart and a set of vertical joints 165° to 180°. The joint spacing varies from 0.6 to greater than 5 m with much of it in the 2 m range. The rock is cut by a few quartz veins. Some of the amphibolite inclusions weather rusty. The unit occurs along the south boundary of the English River Subprovince and has "a consistency in width and great continuity in length" (Gower 1978). Gower described the rock as follows:

"Within the body, the most typical rock type contains markedly zoned alkali feldspar megacrysts (15 x 15 mm), varying in shape from euhedral to lenticular and commonly rotated. Both intensely deformed and undeformed megacrysts occur together, suggesting growth at various stages during intermittent, on-going deformation. The dark grey groundmass consists of comminuted, wispy or slivery quartz and feldspar."

Samples

83-181

History: The rock was quarried during the 1880s for bridge pier construction on the CPR and for construction of the flour mills in Keewatin. There has been no recorded extraction since that time.

References

NTS Map 52F/15
Gower (1978)
King (1983a)
Lawson (1886)
Lawson et al. (1897)
Sweet (1981)

GRANITE STUDY AREAS

Twenty-seven areas of granitoid and gabbroic rocks were selected as worthy of follow-up investigation. These are listed in Table 3.1. These areas have been mapped and sampled on a reconnaissance scale; some were examined in more detail. Field work consisted of examination of road exposures and short traverses. All these areas are close to good all-weather roads or roads which could be kept open. With the exception of GA7 and GA9 the areas are well exposed.

GA1 AUSTIN LAKE GNEISS

Commodity: Variegated granite

Colour: Pink

Fracture: Joints spaced up to 3 m, sheeting not exposed

Texture: Nebulitic gneissic

Group: II

Location: Lots 5 and 6 concession V, and lot 5 concession VI (the location point is in lot 7 concession V), Melick Township, District of Kenora. The intersection between the Austin Lake Road and Highway 659 was taken as a location point.

NTS: 52E/16NW

Latitude: 49°52′46″ Longitude: 94°24′36″

UTM: 398700 m E, 5525950 m N, Zone 15.

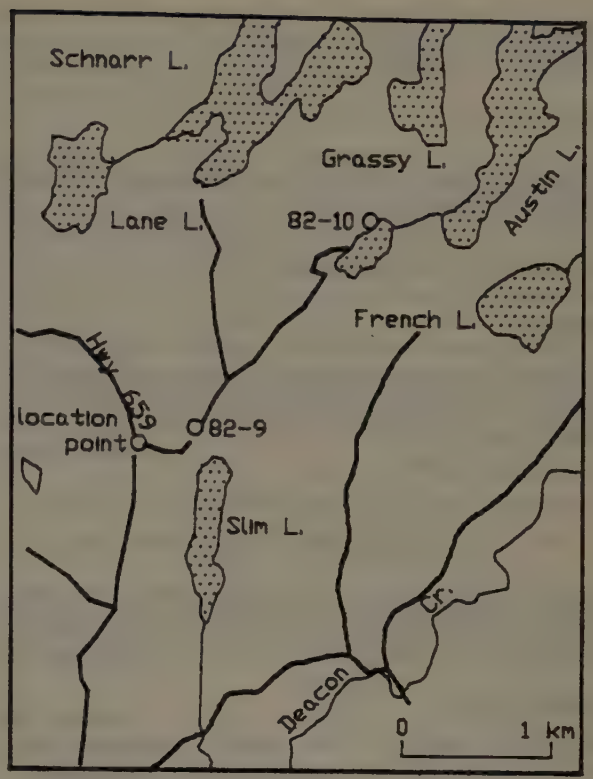
Access: The area is 14 km north-northeast of Kenora and is accessible from Highway 659.

DESCRIPTION

Geological Setting: The area is underlain by gneissic rocks intruded by quartz monzonite of English River Subprovince.

Previous Geological Work: The area has been mapped by Breaks et al. (1975e) and Gower (1975, 1978). Gower named this area the Austin Granite.

Geology: The rock examined is light pink, medium- to coarse-grained, biotite granite. It does not have a distinct gneissosity or foliation but there has been segregation of biotite to form nebulitic zones. Biotite composes 5 to 10% of the rock but this can increase to 20% in the nebulitic zones. These zones are variable in size up to several metres and are gradational with the non-nebulitic granite. The colour is variable over relatively small distances. Gower (1978) stated: "Biotite schlieren, areas of quartz diorite, nebulitic, angular to lenticular patches of biotite-rich tonalite and amphibolite are common and oriented [northeast] parallel to the long axis of the body." Two generations of two feldspar pegmatites of similar composition cut the granite. These form narrow dikes (less than 30 cm) of random orientation. The contacts of the pegmatites with the granite and each other are sharp. The predominant joint directions are 030° and 135°. The spacing of the joints is variable; most are 3 m apart but joints as close as 30 cm were seen. North of the sample location the rock becomes more gneissic and inclusion-rich. Here the gneissosity trends 070-075°, dipping moderately northward (50°).



Location Map GA1 — Austin Lake Gneiss.

Samples

82-9

History: There has been no known quarrying in this area. Several small farms are located on patented lots.

References

NTS Map 52E/16
Gower (1975, 1978)
Breaks et al. (1975e)

GA2 BLINDFOLD LAKE

Commodity: Granite

Colour: Pink

Fracture: Joints spaced 1.5 m, sheeting 1 m and probably thickens with depth

Texture: Massive equigranular

Group: II

Location: Lemay Township, Kenora District, 24 km southeast of Kenora. Sample location 82-56 is taken as the location point.

NTS: 52F/9NE

Latitude: 49°39′44″ Longitude: 94°12′15″

UTM: 413150 m E, 5501550 m N, Zone 15.

Access: The area is crossed by Highway 71 and several short dry-weather roads leading to a microwave tower, a gravel pit and recent logging areas.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of a marginal lobe on the west side of the Dryberry Batholith.

Previous Geological Work: The area was mapped in part by Suffel (1931), Trowell (1979) and Trowell et al. (1980).

Geology: The rock is massive pink biotite granite, medium to coarse in grain size with occasional feldspar crystals to 2 cm. There are occasional black knots, and narrow irregular pegmatite and aplite dikes cutting the granite in several places. Jointing directions show considerable variation but the two major directions are east-northeast and southeast. The colour varies from medium pink to pale pink over a distance of half a kilometre. The type locality for this granite is the vicinity of the power line where it crosses Highway 71. Here the granite is deep rosy pink in colour with minor epidote in the joints.

Petrology: The rock polishes well with a minimum differential abrasion or mineral plucking. The colour of the polished surface is rosy pink with a definite brown tone. The mafic minerals form a very weak foliation. The quartz is clear and colourless. The feldspar is white to light brown and somewhat cloudy in appearance. The colour is primarily due to hematite surrounding the grains and staining the feldspar. The mafic mineral is biotite, and epidote is associated with it. A few grains of magnetite are present. Modal analysis indicates this rock is a granodiorite. In thin section much of the feldspar, particularly the plagioclase is altered. The plagioclase crystals are zoned, with the strongest alteration in the central part of the crystal.

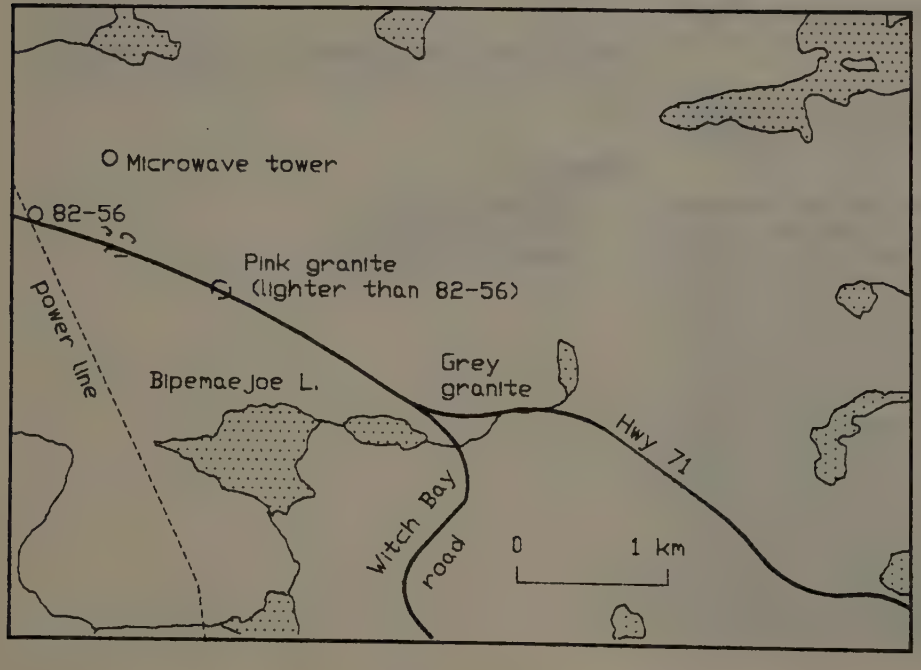
Samples

82-56

History: There is no record of any extraction of this stone.

References

NTS Map 52F/5
Suffel (1931)
Trowell (1979)
Trowell et al. (1980)



Location Map GA2
Blindfold Lake.

GA3 FORGOTTEN LAKE

Commodity: Granite

Colour: Brown

Fracture: Joints spaced 2 to 3 m, sheeting 1 to 2 m

Texture: Massive porphyritic

Group: I

Location: District of Kenora, 9 km north of Redditt. The outlet of Forgotten Lake was taken as a location point.

NTS: 52L/1SW

Latitude: 50°04′23″ Longitude: 94°21′42″

UTM: 402450 m E, 554740 m N, Zone 15.

Access: The area is crossed by a good forest access road (English River road) that extends north from the town of Redditt. .

DESCRIPTION

Geological Setting: The area is underlain by a porphyritic quartz monzonite phase of the Lount Lake Batholith.

Previous Geological Work: The area was mapped at a reconnaissance scale by Breaks et al. (1975e, 1978) and was included on a compilation map by Thurston and Bartlett (1981).

Geology: The rock is exposed in a ridge which trends roughly east. The rock is white weathering, light brown biotite granite. It is porphyritic with brown feldspar phenocrysts to 2 cm in length in a medium-grained matrix. There are two predominant joint directions 030° and 130°; both are vertical. The joints are spaced 2 to 3 m. Sheeting is 1 to 2 m at the surface and apparently thickens with depth. Two distinct colours are available at this site: brown, and pink that grades into a distinct purple shade to the south. There appears to be only a small amount of purple granite present.

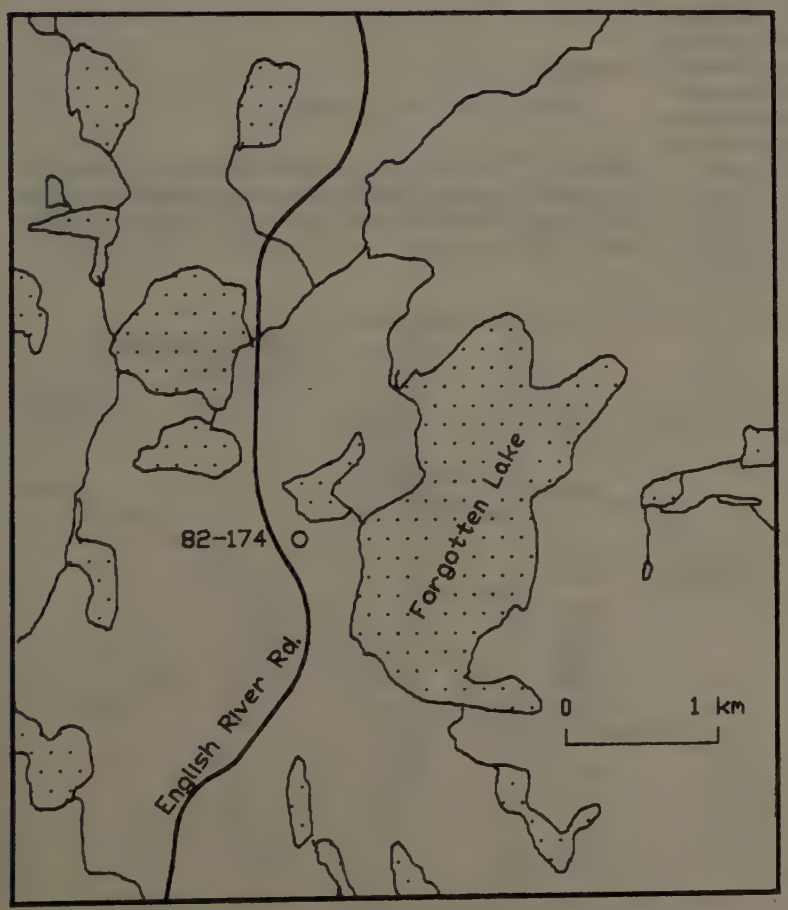
Samples

82-174, 83-7, 83-39, 83-40, 83-41

History: The area has not been quarried. Recent logging operations have provided good road access from Redditt.

References

NTS Map 52L/1
Breaks et al. (1975e; 1978)
Thurston and Bartlett (1981)



Location Map GA3
Forgotten Lake.

GA4 404 ROAD

Commodity: Granite

Colour: Pink-grey to grey-brown

Fracture: Joints are spaced up to 3 m, sheeting is 1 m at surface

Texture: Equigranular massive to weakly foliated

Group: II

Location: Eastern part of Rowe Township, District of Rainy River. Sample 82-69 is taken as a location point.

NTS: 52C/13NW, 52D/16NE

Latitude: 48°57′56″ Longitude: 93°59′13″

UTM: 427800 m E, 5423850 m N, Zone 15.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Sabskong Batholith.

Previous Geological Work: The area was mapped by Blackburn (1976) and Lawson (1888). Blackburn described part of the batholith as follows:

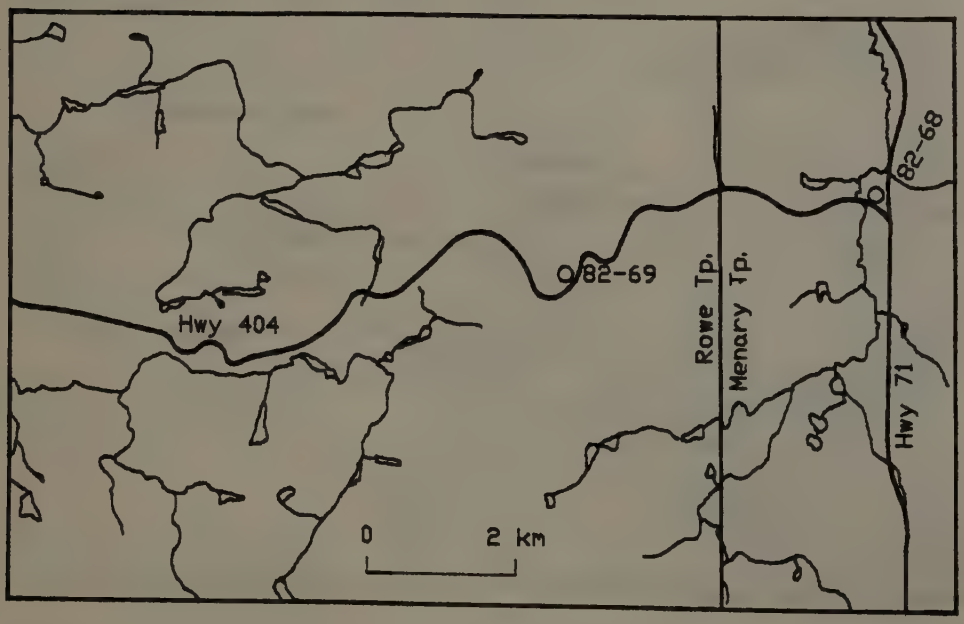
"The central parts of the batholith are exposed in the extreme northwestern corner of the map-area, but a good portion of its margin is located in contact with the mafic rocks of the metavolcanic belt. Outcrop density is poor within the map-area, but from field evidence the batholith appears homogeneous at the periphery, dominantly trondhjemitic and only weakly foliated, but near its centre, it is gneissic, with mafic schlieren and rather chaotic folding. Biotite is the dominant and usually the only mafic mineral, and in the peripheral zone biotite occurs in "books" of up to 1 cm size. In hand specimens the rock has a greyish appearance on the weathered surface. On fresh surfaces, biotite, quartz, plagioclase, and minor amounts of epidote are easily seen. In thin-section, the typical granitic texture is seen. Plagioclase is usually subhedral, and twinned according to Carlsbad, albite, and pericline laws. Zoning, usually weak, is common in both twinned and untwinned individuals, and occasionally is of oscillatory type, the range seems to be confined within the limits of oligoclase. Quartz occurs in discrete areas of sutured, strained grains, and also interstitially. Biotite occurs usually as ragged anhedral to subhedral laths, commonly bent and strained, and varies from brown to olive green in colour. Epidote is often present, both as a secondary product, associated with sericite, of alteration of plagioclase, and in euhedral grains of probable primary origin. Microcline, though always minor is invariably present, interstitial to the plagioclase, and associated with myrmekite."

Geology: The area examined comprises light pinkish grey, medium-grained biotite 'granite'. There are three predominant joint sets: 120-145°/85°E 3 m or more apart; 030°/85°E 1.5 m or more apart; and 080-090°/85°S. The outcrop surface is lichen-covered but does not appear to have great textural variations. There is a slight foliation trending 315° in the western outcrops and only a few small knots in evidence. Aplite dikes 5 to 30 cm wide locally cut the granite. The dikes are usually several metres apart. The colour of the granite varies from light pink-grey to grey-brown; the grey-brown shade is predominant. Colour changes are gradational over distances of 50 to 100 m.

Samples

82-69, 83-46, 83-37, 83-48

History: There is no recorded bedrock extraction but several small gravel pits are present. The area was logged several years ago and the road system dates from this time.



Location Map GA4
404 Road.

References

NTS Maps 52C/13, 52D/16
Blackburn (1976)
Lawson (1888)

GA5 JUNCTION GRANITE

Commodity: Granite

Colour: Pink

Fracture: Joints and sheets spaced 1 m

Texture: Porphyritic

Group: III

Location: Northeastern Kirkup Township, District of Kenora. The intersection of Highways 17 and 71 was taken as a location point.

NTS: 52E/9NE

Latitude: 49°43′32″ Longitude: 94°14′53″

UTM: 410000 m E, 5508650 m N, Zone 15.

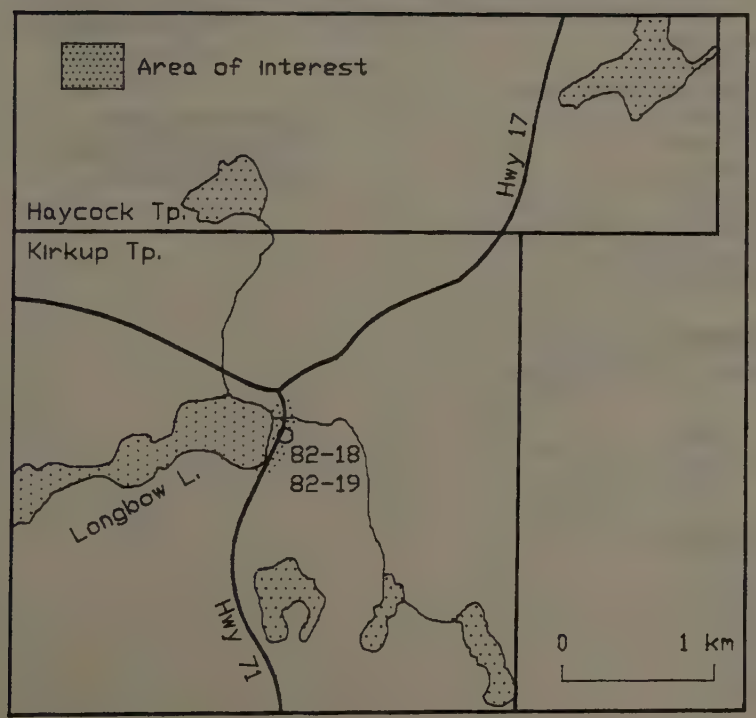
Access: The deposit is crossed by Highway 71.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks on the margin of the Dryberry Batholith.

Previous Geological Work: The area has not been mapped but was included in a compilation by Blackburn et al. (1981).

Geology: The deposit is a small, probably lensoid body of medium- to coarse-grained, pink quartz and feldspar porphyritic granite. Each type of phenocryst makes up 3 to 5% of the rock with local increases in quartz phenocrysts up to 25%. The rock is massive but has joints at 1 m or less spacing. Major joint



Location Map GA5
Junction Granite.

trends are 000°/65°E, 065°/subvertical and 160°/35°S. It is cut by occasional quartz veins. The grain size and phenocryst content increases to the south. The south contact of the body is well exposed. Here the host rock is a gneissic migmatite. Several narrow dikes of the porphyry intrude the gneiss parallel to the contact. Where it is exposed on the highway the contact trends 075°/90°.

Petrology: The rock is salmon pink in colour and polishes well. The groundmass is 1 to 2 mm pink feldspar and quartz grains with minor epidote. Most of the colour is due to pink feldspar and a small amount of it is due to hematite stain. The quartz phenocrysts are clear, colourless and up to 1 cm in diameter, although most are less than 5 to 8 mm. The feldspar phenocrysts are zoned and are similar in size to the quartz phenocrysts. Compositionally the rock is a granite.

Samples

82-18, 82-19, 82-20

History: There is no record of rock being quarried in this area.

References

NTS Map 52E/9
Blackburn et al. (1981)

GA6 GRANITE LAKE AREA

Commodity: Granite

Colour: Pink

Fracture: Joints spaced 1.5 m apart, sheeting 1 m

Texture: Porphyritic

Group: III

Location: Northwest part of Boys Township, District of Kenora. The northeast bay of Granite Lake was taken as a location point.

NTS: 52E/10NW
Latitude: 49°42′43″ Longitude: 94°51′32″
UTM: 366000 m E, 5508100 m N, Zone 15.

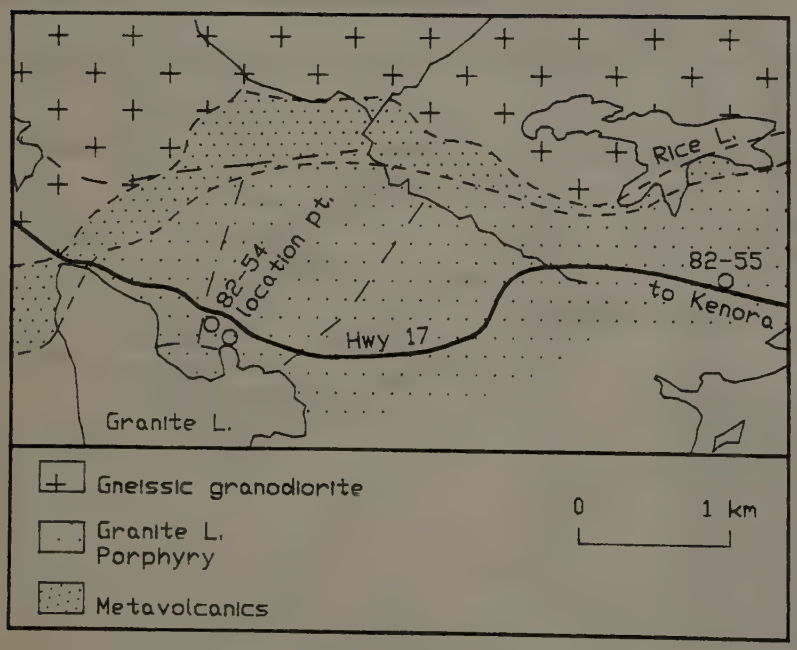
Access: The area is 28 km west of Kenora and is crossed by Highway 17.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks.

Previous Geological Work: The area was mapped in part by Greer (1931), Thomson (1936) and as part of a larger study by Vagt (1968) who named these rocks the Granite Lake Porphyry.

Geology: The Granite Lake Porphyry is an oval shaped body 4.5 km long and 3 km wide. The rock is pink to greyish pink in colour with pink feldspar phenocrysts up to 2 cm. There are black well rounded inclusions of amphibolite. Inclusions make up 1% of the granite (Vagt 1968). There is a weak but persistent foliation evidenced by alignment of biotite



Location Map GA6
Granite Lake. Geology after Vagt (1968).

flakes and trending 070° to 080°. This foliation varies in intensity but is present in many parts of the granite. Mapping by Vagt (1968) indicated a northeast-trending fault cutting the central part of the body; in addition to this, he shows other lineaments also interpreted as faults. Vagt showed several north-northeast foliations paralleling the northeast lineaments.

There are several major steeply dipping to vertical joint sets oriented northwest and north-northwest. Vagt indicated the dominant sets are 048° and 122°. The spacing of the joints varies from 0.5 to 3 m, but 1 to 1.5 m is common. Sheeting varies from 0.3 to 1 m. The west end of the body shows thin sheeting particularly well. There are widely spaced zones of very close (a few cm) sheeting about 0.3 m thick spaced 3 to 6 m apart.

Petrology: The rock is hornblende-biotite granodiorite (Vagt 1968) with microcline phenocrysts. Modal analysis of sample 82-55 confirmed this. Phenocrysts make up 5% of the rock; these have numerous biotite inclusions. The pink colour is due primarily to fine hematite surrounding and staining the feldspar. Most of the feldspar is very pale pink in colour. Epidote is evident associated with mafic minerals. Hematite forms discrete dark pink spots on the feldspar.

Samples

82-53, 82-54, 82-55

History: There has been no recorded rock quarrying in this area. Numerous cottages are located on Lake of the Woods and near the communities of Clearwater Bay and Granite Lake.

References

NTS Map 52F/10
Greer (1931)
Thomson (1937)
Vagt (1968)

GA7 MARCHINGTON RIVER AREA

Commodity: Granite

Colour: Pink

Fracture: Joints spaced 1 m, sheeting not exposed

Texture: Massive to weakly foliated, equigranular

Group: III

Location: The area is located east of the Marchington River, District of Kenora. The north tip of Yett Lake was taken as a location point.

NTS: 52J/6SW
Latitude: 50°18′43″ Longitude: 91°19′34″
UTM: 619100 m E, 5574400 m N, Zone 15.

Access: The area is 40 km northeast of Sioux Lookout and is crossed by Highway 516 (the Marchington Lake Access Road).

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Yett Lake Stock.

Previous Geological Work: The area has not been geologically mapped in detail. Moore (1910) outlined the granitoid and metavolcanic areas; Hudec (1965) mapped granitoid rocks north of the Yett Lake stock. Trussler (1982) mapped the east part of the Yett Lake stock. The area is included in a compilation by Breaks et al. (1980).

Geology: The rock is pink to pinkish grey, biotite granite with blue quartz. The granite is exposed in a few low outcrops; most of the area is covered by extensive sandy overburden deposits. Mafic inclusions up to 10 cm long are common. The biotite content tends to form small clots. A weak foliation trending 040-060°/80°S is the result of biotite alignment. Jointing is extensive, usually spaced about 1 m, although some joint sets are very closely spaced. The predominant directions are northeast and east-southeast. Minor pyrite is present in some of the joints. The rock polishes well. Modal analyses indicate its composition is granodiorite to tonalite.

Samples

82-201

History: There has been no quarrying in this area. Recent logging operations have provided road access.

References

NTS Map 52J/6
Breaks et al. (1980)
Hudec (1965)
Moore (1910)
Trussler (1982)

GA8 MULCAHY LAKE SILL

Commodity: Black Granite

Colour: Black

Fracture: Joints and sheeting spaced 1 to 2 m

Texture: Massive to layered

Group: I

Location: Southwest of Dryden, District of Kenora. The southwest end of Mulcahy Lake was taken as the location point.

NTS: 52F/11SW

Latitude: 49°35′39″ Longitude: 93°22′15″

UTM: 473150 m E, 5493350 m N, Zone 15.

Access: The area is accessible by road as shown on the location map.

DESCRIPTION

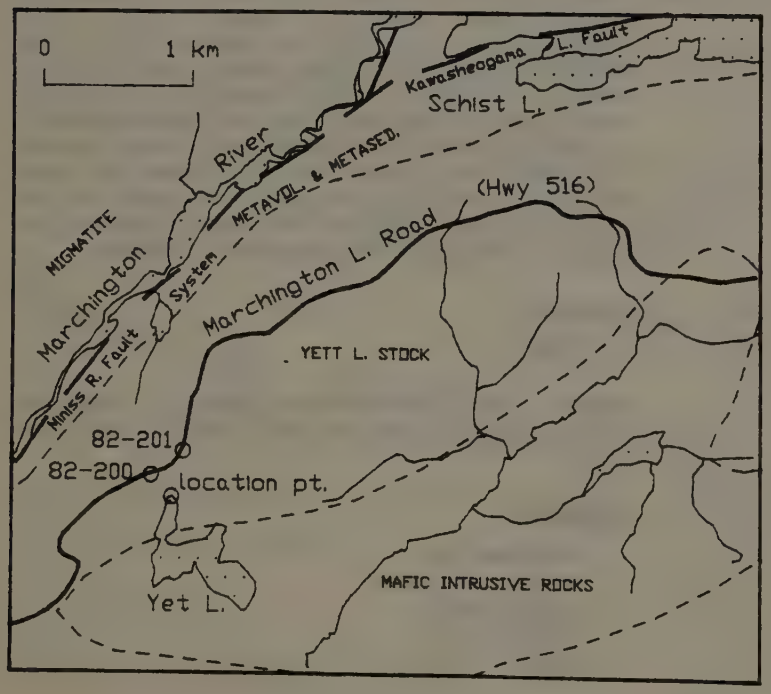
Geological Setting: The Mulcahy Lake Sill is a pear-shaped body of anorthositic gabbro surrounded by granitoid rocks.

Previous Geological Work: The area was mapped by Moorhouse (1941) and Davies and Watowich (1958). The Mulcahy Lake Sill in particular has been described by Blackburn (1978), Brown (1980), Davies (1966) and Sutcliffe and Smith (1985).

Geology: The intrusive body has a maximum width of 7 km and an overall length of 17 km, the main part of the body is 7 km wide and 9 km long. The topography is locally rugged with numerous outcrop ridges; however the area is densely forested and individual outcrops are small and frequently obscured by vegetation.

The body trends northeast and has definite layering present in many parts of it. These layers range from 1 to 10 cm and occasionally up to 20 cm. They show sharp contacts with the adjacent layers and internal mineralogical grading with mafic minerals on the south (bottom) of the layer and plagioclase towards the north (top) of the layer. The layering is present in many parts of the body (Davies 1966; Blackburn 1978) but two sites sampled (82-179, 82-180) are massive, and may be large enough to produce 'black granite'. The presence of sulphide mineralization in many parts of the body is detrimental to its use. Mapping by Nahrain (Assessment files A-1, Resident Geologist's Files, Ministry of Northern Development and Mines, Kenora) indicated that sulphides are found in zones conformable with the layering of the body. Alteration in the body is minor (Davies 1966) but tends to be strongest close to the margins. Jointing in the gabbro is variable from less than 1 m to 2 m in the parts of the body examined. Predominant joint directions are north-northeast and east-southeast to southeast.

The most promising part of the body is indicated on the location map. This zone, up to 500 m thick, is in the lower part of the sill conformable with the layering of the body. The rock polishes well; the colour is black with slight green or brown tints. The layering in evidence on the weathered surface of so much of the rock is less distinct on the fresh surface. Layering is evidenced by changes in mineralogy, accessory minerals and grain size, the last appearing only on the polished surface.



Location Map GA7
Marchington River.

Samples

82-177, 82-178, 82-179, 82-180, 83-13, 83-18, 83-19, 83-20

History: There has been no quarrying activity in this area but parts of the body have been investigated for base metal potential.

References

NTS Map 52F/11
Assessment Files, Resident Geologist's Office, Ministry of Northern Devlopment and Mines, Kenora: Falconbridge Nickel Mines, Line Lake D-3; Canadian Pacific Railway Co., Beaverhouse Lake Area B-1; M.J. Boylen, Line Lake A-1.
Blackburn (1978)
Brown (1980)
Davies (1966)
Davies and Watowich (1958)
Moorhouse (1941)
Sutcliffe and Smith (1985)

GA9 NABISH LAKE

Commodity: Black Granite

Colour: Dark green to dark grey

Fracture: Joints spaced 1 m

Texture: Massive to layered

Group: II

Location: 17 km southwest of Dryden, District of Kenora. Sample 82-186 was taken as a location point.

NTS: 52F/10NW

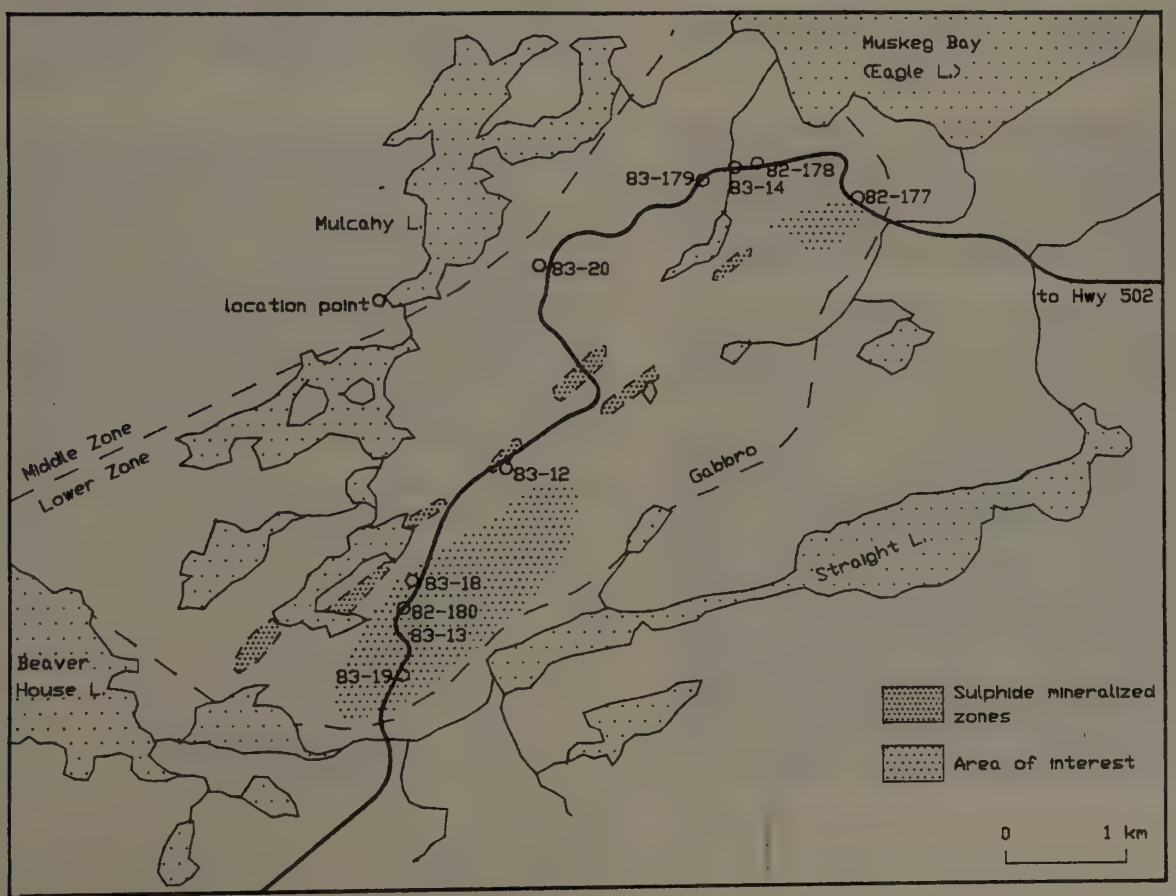
Latitude: 49°38'58" Longitude: 92°56'12"

UTM: 504500 m E, 5499400 m N, Zone 15.

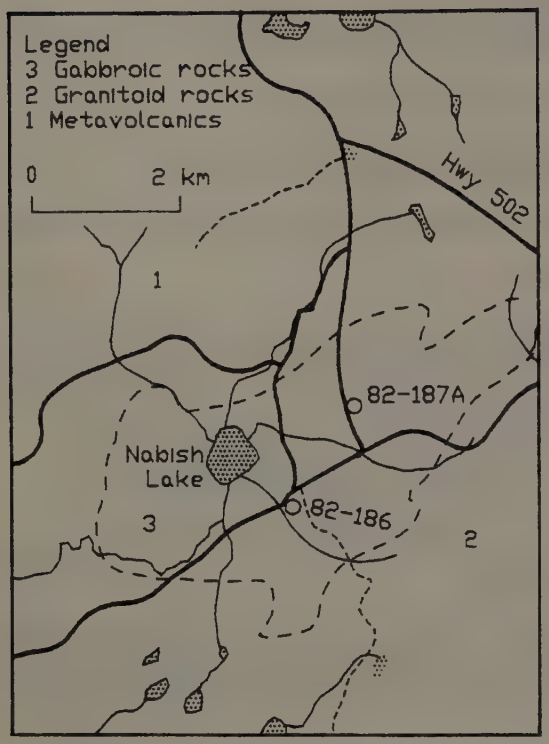
Access: The area is crossed by logging roads.

DESCRIPTION

Geological Setting: The area is underlain by gabbroic rocks which have intruded metavolcanics to the west and have been intruded by granitoid rocks on the east.



***Location Map GA8** — Mulcahy Lake Sill.*



***Location Map GA9** — Nabish Lake. Geology after Davies (1966).*

Previous Geological Work: The area has been mapped by Moorhouse (1941) and Satterly (1943). The gabbro has been studied by Davies (1966) and has been explored for base metal mineralization (Assessment Files, Resident Geologist's office, Ministry of Northern Development and Mines, Kenora).

Geology: The Nabish Lake gabbro is a poorly exposed, altered gabbro body surrounding Nabish Lake. The southern extension of the gabbro has been intimately injected by granodiorite and is devoid of primary structure (Davies 1966). The gabbro has a weak layering similar to that found in the Mulcahy Lake area. The trend of this layering varies as shown by Davies (1966). The gabbro varies in grain size from medium (2 mm) to coarse (19 mm). Minor felsite and mafic dikes cut the gabbro. One exposure of the gabbro is feldspar-porphyritic. Davies (1966) described the texture and alteration in detail. In summary he found two types of gabbro based on texture: one has plagioclase in a parallel arrangement of subhedral crystals; the other has diversely oriented plagioclase. All pyroxenes have been altered to amphibole some of which is fibrous. The plagioclase is altered to sericite and epidote to varying degrees.

Samples

82-186, 82-187A, 83-17

History: The rock has not been quarried but extensive exploration for copper and nickel mineralization has taken place. The present road access is due to logging operations.

References

NTS Map 52F/10
Assessment Files, Resident Geologist's Office, Ministry of Northern Development and Mines, Kenora
Davies (1966)
Moorhouse (1941)
Satterly (1943)

GA10 PERRAULT FALLS

Commodity: Granite

Colour: Pink

Fracture: Joints are spaced 1 to 1.5 m

Texture: Clotty

Group: III

Location: Perrault Falls, District of Kenora. The highway bridge at Perrault Falls was taken as the location point.

NTS: 52K/6SE

Latitude: 50°20′36″ Longitude: 93°08′56″

UTM: 489400 m E, 5576600 m N, Zone 15.

Access: The granite body is crossed by Highway 105 and Wabaskang Lake.

DESCRIPTION

Geological Setting: The area is underlain by migmatitic metasediments of the English River Subprovince.

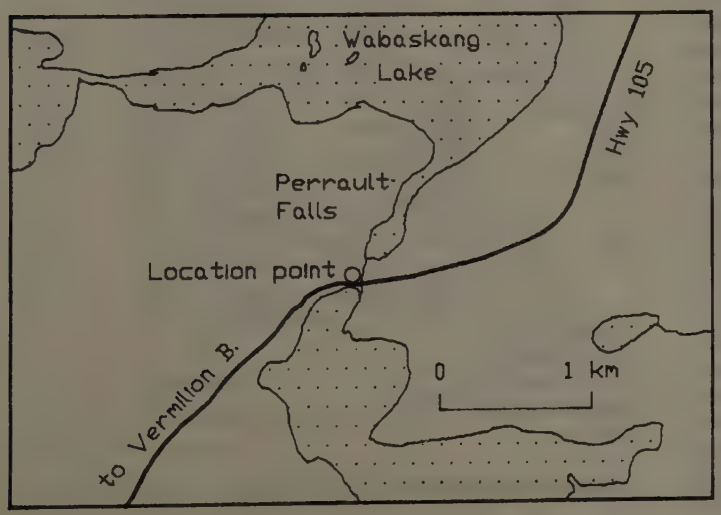
Previous Geological Work: The area was mapped by Breaks et al. (1976) and the granite body has been studied by Morin (1970) and Morin and Turnock (1975).

Geology: The granite consists of a pink, medium-grained groundmass with biotite-rich clots. The groundmass is uniform pink in colour with occasional megacrysts to 2 cm. The colour is due to pale pink feldspar and minor hematite. The quartz is clear, colourless to grey; the feldspars are clear pale pink in colour. The clots are 1 to 15 cm in diameter with 2 to 4 cm as a common size. The mineralogy of the groundmass is microcline-perthite 75%, quartz 15%, plagioclase 5%, biotite 3%, garnet 3%, muscovite 2% and minor sillimanite, zircon, myrmekite and hematite (Morin 1970). Modes published by Morin and Turnock (1975) for the groundmass indicate that its composition is granite. The average composition by Morin (1970) plots as quartz alkali feldspar syenite. The clots are composed of biotite, muscovite, quartz, sillimanite, garnet, minor hematite, microcline, rutile and zircon (Morin 1970). The granite contains inclusions of the country rock and minor pegmatite veins and dikes. Joints and fractures are 0.5 to 1.5 m apart in the outcrops adjacent to the road. The material sampled was badly fractured due to blasting.

History: The rock has not been quarried.

References

NTS Map 52K/6
Breaks et al. (1976)
Morin (1970)
Morin and Turnock (1975)



Location Map GA10
Perrault Falls.

GA11 PINE ROAD

Commodity: Granite

Colour: Pink

Fracture: Joints spaced 2 m and greater, sheeting 1 to 2 m at surface and thickens with depth.

Texture: Massive equigranular

Group: I

Location: South of Pine Station on the CPR, west of Vermilion Bay, District of Kenora. Sample 82-161 was taken as a location point.

NTS: 52F/13SW, 52F/12NW

Latitude: 49°46'12" Longitude: 93°47'42"

UTM: 442700 m E, 5513100 m N, Zone 15

Access: The area is crossed by the Winnange Lake Forest Management Area road (Pine Road). This road extends south from Highway 17 at a point 1.6 km west of the east boundary of Tustin Township.

DESCRIPTION

Geological Setting: This area is underlain by granitoid rocks of the Dryberry Batholith.

Previous Geological Work: The area has not been mapped.

Geology: There are two zones of massive pink granite in this area. The first occurs in the vicinity of Sample 82-158. This rock is pink, medium-grained, biotite granite with abundant homogeneous pink to red, biotite-quartz-microcline pegmatite patches. There are large schlieren and mafic inclusions. There is no obvious foliation and no joints. Overburden is thin and patchy.

The second area is the vicinity of samples 82-161 and 82-163. The rock is deep pink where it is exposed along the road but the colour fades to pink similar to the Vermilion Bay granite away from sample 83-161. Large amounts of it are massive and apparently free of joints. There are a few schlieren and small, patch pegmatites plus occasional large feldspar crystals. The few joints that are present are oriented 000°, 050°, 100° and 120-140°; all are vertical. The major joint set trends 100°; the others are much less common. Joint spacing for this set is 5 m and greater. In grain size and texture the rock is very similar to the Vermilion Bay granite. Sheeting is 1 to 2 m at surface and increases with depth. Knots and schlieren are rare but do occur, particularly near the south and west extremities of the area examined. The pink granite extends at least 1.5 km farther south of sample site 82-163, but the occurrence of pegmatite, knots and schlieren becomes more common. Massive grey granite is exposed on the shores of a small lake to the east of the pink granite exposure. The portion of this material is structurally below the pink unit and could dip beneath the pink unit although this rock was not seen in the other parts of the examined area.

Petrology: Sample 82-158 is pink fine-grained biotite granite with pegmatitic patches. The rock has a weak foliation due to alignment of biotite flakes. Biotite makes up 3 to 5% of the rock but occasionally occurs in small knots. The pegmatite is composed primarily of pink feldspar with 5 to 10% quartz, and accessory biotite, magnetite and apatite. Sample 82-162 is massive fine- to medium-grained (2-5 mm), deep pink, biotite granite (by modal analysis). It contains 3 to 5% biotite, clear colourless quartz and white to clear feldspar (microcline). The colour is due to fine disseminated hematite. It polishes well without plucking.

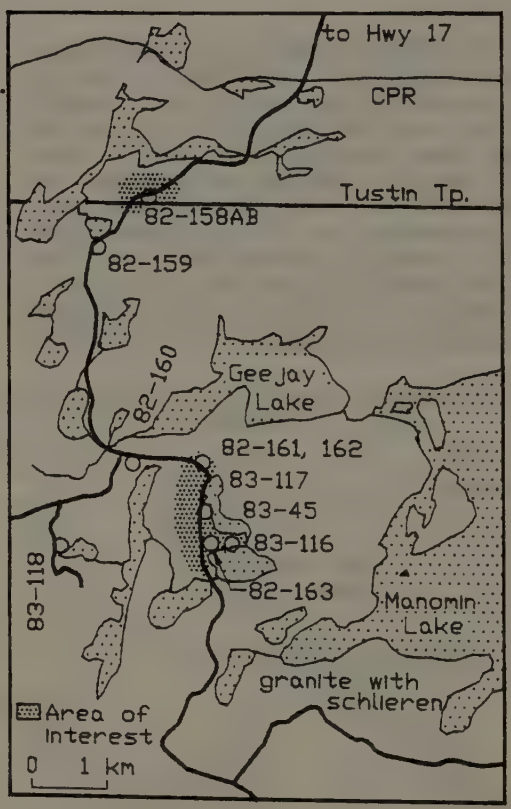
Samples

82-158, 82-161, 82-162, 82-163, 83-117

History: The granite has not been quarried. The area has been logged recently and large outcrop areas are exposed from this work.

References

NTS Map 52F/13, 52F/12
Blackburn et al. (1981)



***Location Map GA11** — Pine Road.*

GA12 REVELL BATHOLITH

Commodity: Granite

Colour: Grey

Fracture: Widely spaced joints (3 m)

Texture: Massive equigranular

Group: I

Location: The deposit is located in the southern part of Revell Township, District of Kenora. An old pit in lot 8 concession II was taken as the location point.

NTS: 52F/9SW, SE

Latitude: 49°33′55″ Longitude: 92°13′55″

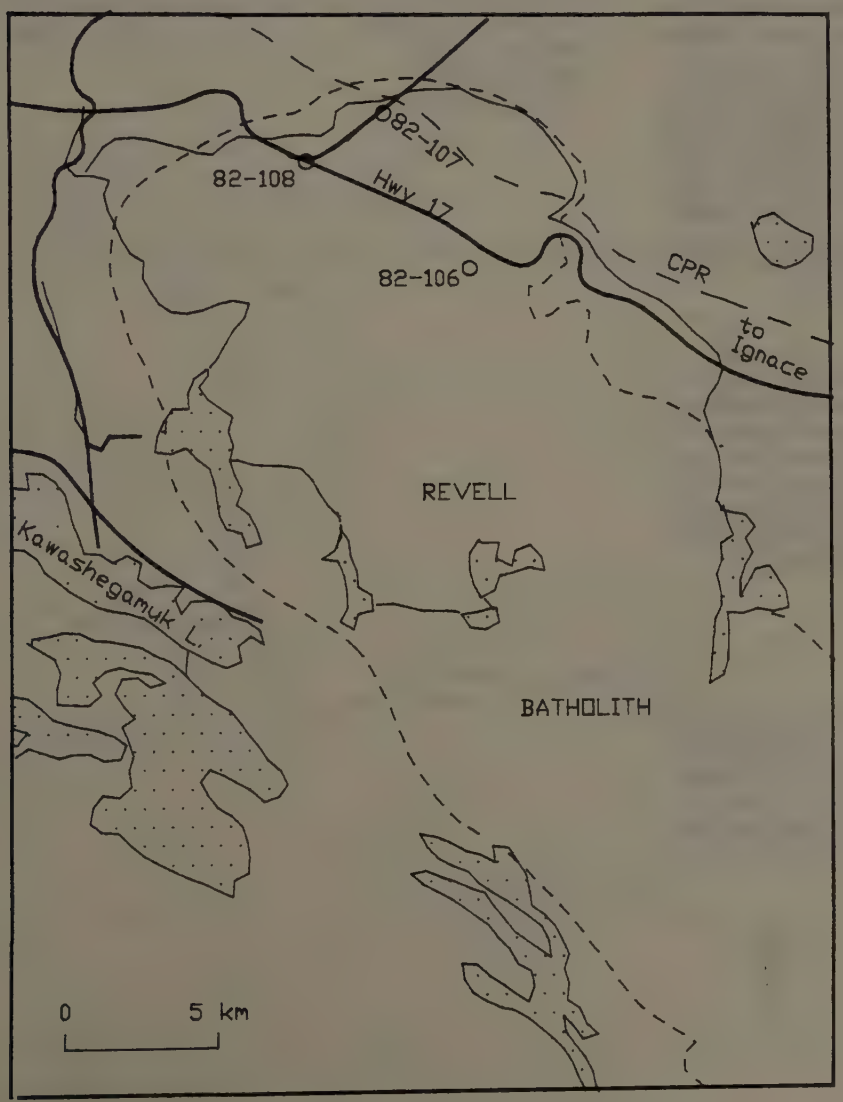
UTM: 555550 m E, 5490400 m N, Zone 15.

Access: The north part of the Revell Batholith is an elongate granitoid body emplaced in predominantly mafic metavolcanics.

DESCRIPTION

Previous Geological Work: The north part of the batholith was mapped by Satterly (1960) and McInnes (1906), the west part by Kresz et al. (1982b), Thomson (1934) and Guindon (1979). Satterly described the deposit as follows:

"In the Dyment area the granodiorite mass is remarkably uniform in composition. The rock is quite massive, and foliation was only observed near the margins of the batholith. The granodiorite is a pink and white to grey, medium- to almost coarse-grained rock composed essentially of oligoclase, microcline, quartz and biotite. Muscovite may be present, associated with biotite. Parts of the oligoclase are replaced by clusters of white mica and clinozoisite. The biotite forms large flakes or cluster of flakes usually accompanied by the accessory minerals epidote, apatite, sphene, and rarely zircon. A few flakes of molybdenite were seen in the granodiorite on the Dryden Paper Company's road in lot 6, concession III, Revell Township."



Location Map GA12
Revell Batholith.

TABLE 3.2. MODAL ANALYSES OF SAMPLES FROM THE REVELL BATHOLITH (GA12).

	1	2	3	4	5	6	7
Quartz	27.7	32.8	15-20	20	31.5	31.3	30.4
Plagioclase	49.7	51.9	40-50	62	53	53.5	51.0
Orthoclase	12.0	8.7	10	5	6.6	11.5	10.3
Biotite	8.2	5.6	10	10	8.9	3.7	8.3
Accessories	2.4	1		3			

1. Highway 17, lot 8 conc. II, Revell Tp. (Satterly 1960).
2. Lot 12 conc. III, Revell Tp. (Satterly 1960).
3. Sample DLG30 (hand specimen), west side of Menin L., UTM 550600 m E, 5480800 m N, Zone 15 (Guindon 1979).
4. Thin section of same sample as 3.
5. Sample 82-106, unsurveyed territory S. of the SE. corner of Revell Tp., UTM 561100 m E, 5487100 m N, Zone 15
6, 7. Samples 82-108 from main outcrop area in lot 8 conc. II, Revell Tp.

Geology: The Revell Batholith is a north-northwest trending elongate granitoid body. It is apparently contiguous with a large area of granitoid plutons extending from Highway 502 in the west to the Keweenawan diabase sills near Lake Nipigon. The rock is fine- to medium-grained, white biotite granodiorite. The rock is massive with an equigranular texture. Joints are for the most part wide spaced (3 m or more). Predominant directions are north and southeast with a lesser direction east-northeast. There are no obvious inclusions in the outcrops examined although mapping by Satterly (1960) indicated a large roof pendant in south central Revell Township. Foliation is absent except in a narrow zone along the contact. The biotite content is 5 to 10%.

Petrology: The rock polishes well. The quartz is clear and colourless; the feldspars are colourless to white, some show distinct zoning on the polished specimen. Surface samples show a small amount of orange-brown stain associated with biotite and one outcrop near the north contact of the body showed a 1 cm weathered rind under thick moss and vegetation cover. Modal analyses by Satterly (1960), Guindon (1979) and the author are given in Table 3.2.

Samples

82-106, 82-107, 82-108

History: A very small quarry 4.5 by 12 m by 1 m deep was found in a large outcrop on the south side of Highway 17 at the intersection with the Basket Lake Road. The history of this quarry is unknown. Several small pits have been sunk for gold exploration and molybdenum exploration near the margins of the batholith.

References

NTS Map 52F/8 and 52F/9
Guindon (1979)
Kresz et al. (1982)
McInnes (1906)
Satterly (1960)
Thomson (1934)

GA13 ROUGHROCK LAKE – CYGNET LAKE AREA

Commodity: Granite

Colour: Pink/red

Fracture: Joints are spaced 4.5 m, sheeting 1 m, thickens with depth

Texture: Massive equigranular

Group: I

Location: Approximately 13 km by road north of Minaki, District of Kenora. The location point is the intersection between Highway 525 and the Cygnet Lake Road

NTS: 52L/2SW.

Latitude: 50°02′41″ Longitude: 94°47′01″

UTM: 372300 m E, 5544850 m N, Zone 15. .

Access: The area is reached by Highway 525 which extends north from Minaki to Caribou Falls. The location point is 10.8 km from the south end of Highway 525.

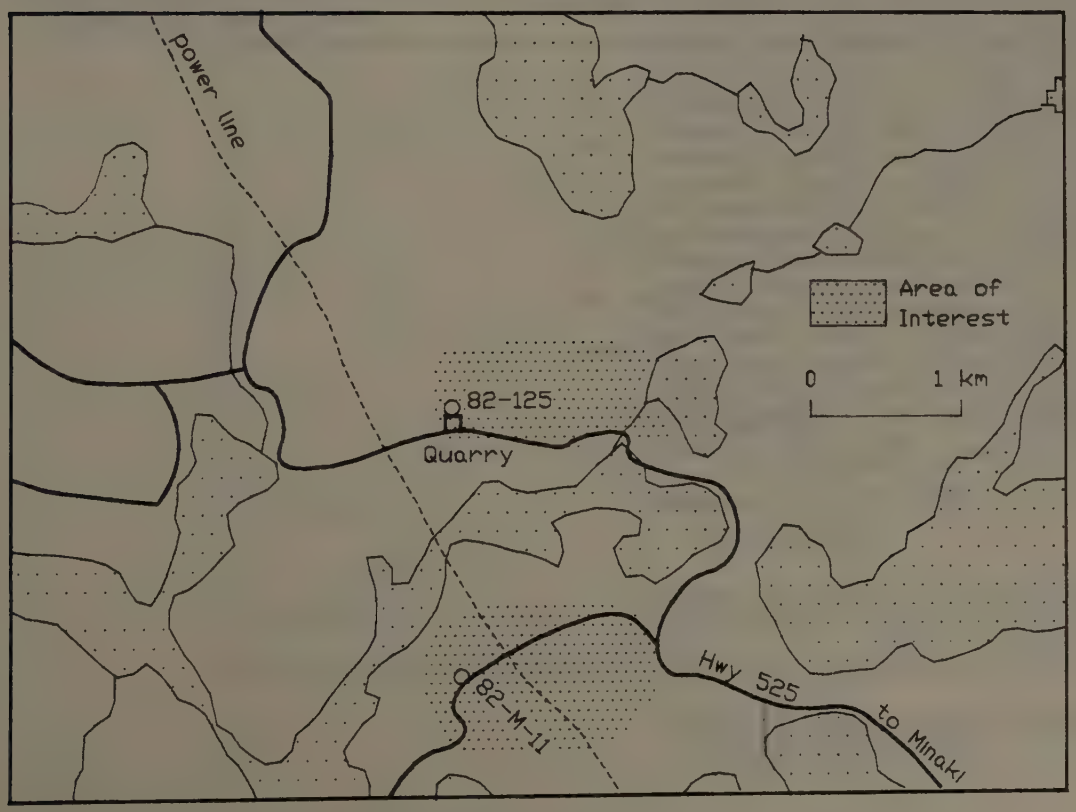
DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Lount Lake batholithic complex.

Previous Geological Work: The area was mapped by Breaks et al. (1975e, 1978) at a reconnaissance scale and was included in a compilation by Thurston and Bartlett (1981).

Geology: The area can be divided into two parts: a south part around the Cygnet Lake road, and a north part 1 km north of the Cygnet Lake road. The granite exposed in the south part of the area is deep pink to red and medium-grained. There are occasional small pegmatitic patches. Joints are spaced 4.5 m and greater, often occurring in pairs spaced a few centimetres apart. Sheeting is 1 m thick in the exposed outcrops and probably thickens with depth. The dominant joint directions are 125° and 050° with a lesser direction 000°; all are vertical. The massive granitoid area is approximately 1 km in width centred on sample site 82-M-11 (82-M sample series are described by Boulet 1983). The granite at the extremities of this area becomes paler in colour and weakly foliated at 060-070°. There are numerous biotite schlieren in the boundary areas.

Granite in the north area is exposed in a high ridge and in a small quarry north of the highway. The rock is a deep pink biotite granite somewhat lighter in colour than the south granite. Jointing is closer (2 to 3 m); sheeting is about 1 m. The major joint directions are 125-130°, 040° and 020°. The contact be-



***Location Map GA13** — Roughrock Lake/Cygnet Lake.*

tween this granitoid body and the gneissic migmatitic rocks occurs 200 m west of the quarry site. There are more patch pegmatites and schlieren close to the contact. Grain size of this granite is more variable than the south granite, ranging from 4 mm up to 1 or 2 cm.

Petrology: Both granites polish well. The biotite content is 3 to 5% on average. In both granites the quartz is clear and colourless, and much of the feldspar is clear colourless, white or pale pink. The deeper pink is due to hematite both disseminated and surrounding the grains. The south granite sample contain up to 1% disseminated interstitial magnetite. The rock is classified as a granite.

Samples

82-126, 82-127, 82-M-10, 82-M-11

History: The north granite was quarried for rock fill during highway construction.

References

NTS Map 52L/2
Breaks et al. (1975; 1978)
Thurston and Barlett (1981)
Boulet (1983)

GA14 SAND LAKE ROAD

Commodity: Granite

Colour: Brown

Fracture: Wide spaced joints, sheeting 1 m and thicker

Texture: Megacrystic to equigranular

Group: II

Location: North of Sand Lake, District of Kenora. Sample 82-M-41 was used as a location point.

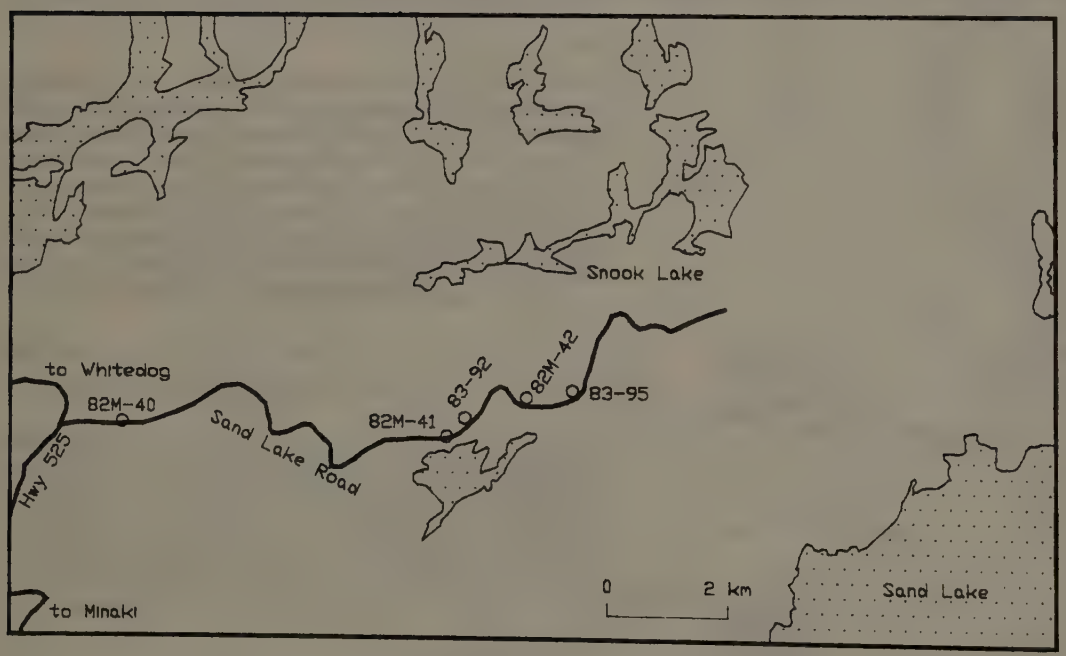
NTS: 52L/2NW
Latitude: 50°09′43″ Longitude: 94°43′20″
UTM: 376900 m E, 5557900 m N, Zone 15.

Access: The area is crossed by the Sand Lake road which leaves Highway 525 35.3 km from the intersection with Highway 596 at Minaki.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Lount Lake Batholith.

Previous Geological Work: The area was mapped by Breaks et al. (1975e, 1978) at a reconnaissance scale and was included in a compilation by Thurston and Bartlett (1981). Boulet (1983) examined parts of the area.



***Location Map GA14** — Sand Lake Road.*

Geology: The rock exposed in this area is pink to brown, biotite granite. The granite is massive in areas up to 1 km wide. Major joint directions are 040°, 080° and 140°; all are vertical. The spacing ranges up from 3 m with large areas of outcrop apparently free of joints. Sheeting is 1 to 2 m where exposed. The granite extends from the vicinity of sample 83-92 to sample 83-95 (2 km) in a zone apparently only a few hundred metres wide. To the north the rock is gneissic, to the east it contains numerous inclusions and pegmatite dikes. The colour and grain size are not uniform. The colour becomes lighter pink-brown and the grain size finer away from 82-M-41. The granite polishes well; sample 82-M-41 is brown in colour, the others are brownish pink. Modal analysis indicates that the rock is a granite. The quartz is clear and colourless; the feldspar is clear to creamy white and a few crystals are zoned. There is 3 to 5% biotite and accessory magnetite. The colour is due to hematite. 82-M samples have been described in Boulet (1983).

Samples

82-M-42, 83-92, 83-94, 83-95

History: The area around sample 82-M-41 has not been quarried but a small quarry for crushed stone was operated 5 km to the west of this area.

References

NTS Map 52L/2
Boulet (1983)
Breaks et al. (1975; 1978)
Thurston and Bartlett (1981)

GA15 VERMILION BAY GNEISS

Commodity: Variegated granite

Colour: Pink

Fracture: Joints are spaced 2 m, sheeting is 1 m

Texture: Gneissic

Group: II

Location: South part of Docker Township, 10 km west of Vermilion Bay. Sample location 82-110 was taken as a location point. See location map GQ8.

NTS: 52F/13SE
Latitude: 49°49′12″ Longitude: 93°30′21″
UTM: Grid 463600 m E, 5518500 m N, Zone 15.

Access: The area is crossed by Highway 17.

DESCRIPTION

Geological Setting: The area is underlain by migmatitic rocks enclosed in the Dryberry Batholith.

Previous Geological Work: The area was mapped by Pryslak (1976).

Geology: The rocks have a well developed gneissosity dipping shallowly toward the east (Pryslak indicated dips of 15°), and often undulating. Melanocratic layers 2 mm to 1.5 cm thick, with up to 60% biotite, alternate with pink leucocratic layers that often appear pegmatitic. Lit par lit pegmatite has intruded in many places. Gneiss with abundant lit par lit pegmatite does not have layering as even and regular as gneiss without lit par lit pegmatite. The gneissosity carries through some of these pegmatites as ghosts. There is a good colour contrast between the leucocratic and melanocratic layers. The shallow dip makes the leucocratic and pegmatite layers seem to be predominant when the area is examined on the surface. The true nature of the rock is only evident in road cuts, and vertical outcrop surfaces. Joints are not evident in much of the outcrop; those that are present are spaced 2 m apart. The predominant direction is 125°. Sheeting is 1 m thick and is parallel to the gneissosity. The rock splits along the biotite layers.

Samples

82-110, 82-111

History: The area has not been quarried for gneiss but the Vermilion Bay Granite is 0.5 km east of this rock.

References

NTS Map 52F/13
Pryslak (1976)

GA16 WHITEDOG

Commodity: Granite

Colour: Red

Fracture: Joints are 2 m and greater, sheeting 0.3 m at surface at the west end of the granite but thicken to the east.

Texture: Massive, equigranular

Group: I

Location: The area is located at Whitedog Falls on Highway 525. The old crushed stone quarry is used as a location point.

NTS: 52L/2SW

Latitude: 50°06′30″ Longitude: 94°52′06″

UTM: 366300 m E, 5552100 m N, Zone 15.

Access: The area is crossed by Highway 525 and is 31 km from Minaki.

DESCRIPTION

Geological Setting: the area is underlain by granitoid rocks partly of the northern extension of the Dalles Batholith and partly of the Tetu Lake Batholith.

Previous Geological Work: The area was mapped by Breaks et al. (1975e, 1978) and was included in a compilation by Thurston and Bartlett (1981).

Geology: The granite of interest is a tongue 800 m wide and 4 km long that trends west-southwest just south of Whitedog Falls hydro electric dam. The granite is predominantly red in colour. There are numerous inclusions and schlieren near the edges of the body. Jointing in the west part of the granite is wide spaced (3 m and greater). The major directions are northeast, east-southeast and southeast with east-southeast directions predominant.

The granite is well exposed in a stripped area and a large quarry (for crushed stone). The granite in the quarry shows colour variation from red to grey-red and minor patch pegmatites. The quarry and stripped area are near the edge of the body and the granite improves toward the centre. Sheeting where exposed in the quarry is 0.3 to 0.6 m at the top of the opening.

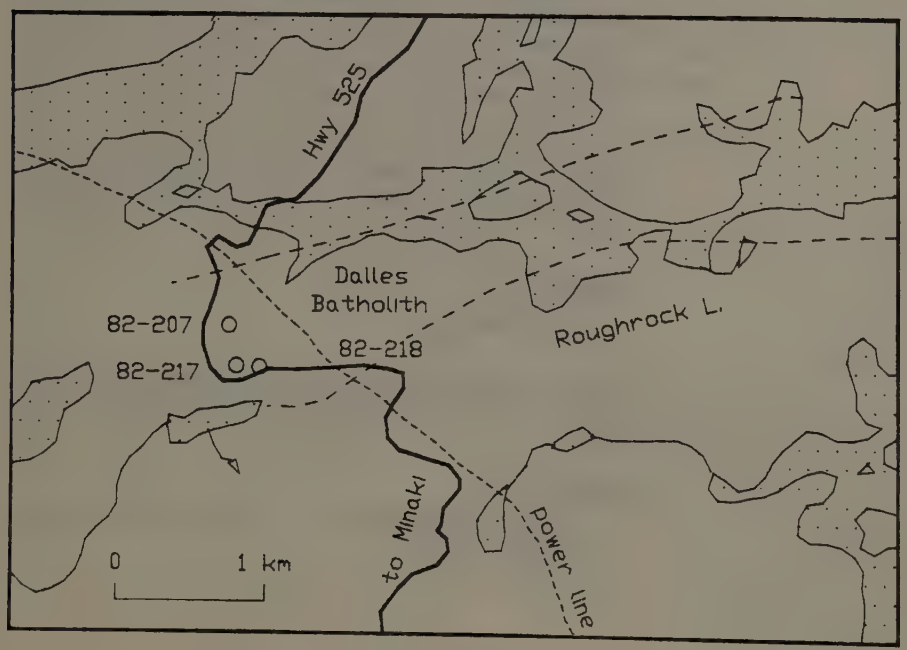
The red granite continues east of the quarry site for 3 km but part of this is covered by the waters of Roughrock Lake. The sheet spacing increases to 2 m and joints become more evident (minimum spacing 2 m). The colour is uniform red with a gradual fading to pink. To the east (sample 83-191 and east) the joint and sheet spacing decreases to 1 m or less and schlieren become more common. The colour of the granite further east of this area is more like that of the Roughrock Lake – Cygnet Lake area (GA13).

A sample of typical red material from the quarry was examined. It polishes well, the quartz is clear and colourless, and the feldspar is pink-red due to hematite. There is about 2% biotite and a small amount of accessory magnetite in this piece. The adjacent granite to the west is part of the Tetu Lake Batholith and is pink to brown-red in colour often with abundant nebulitic schlieren.

History: The granite was quarried for concrete aggregate during the construction of the Whitedog Falls Dam but has not been quarried for dimension stone.

References

NTS Map 52L/2
Breaks et al. (1975a; 1978)
Thurston and Bartlett (1981)



Location Map GA16
Whitedog.

GA17 KEYS LAKE AREA

Commodity: Granite.

Colour: Grey brown

Fracture: Wide spaced joints (2 m and greater), sheeting is 1 m and thickens with depth.

Texture: Porphyritic

Group: I

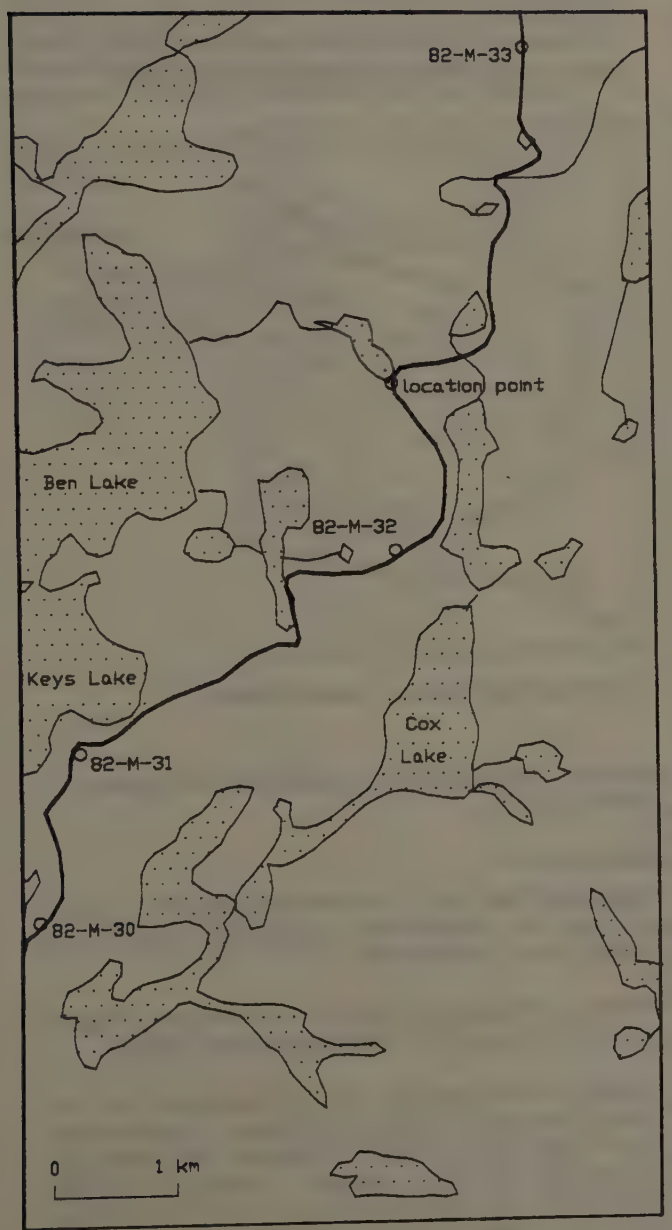
Location: The area is southwest of the Grassy Narrows Indian Reserve, District of Kenora. The south tip of a small unnamed lake east of Ben Lake was taken as a location point.

NTS: 52K/4 SW

Latitude: 50°03′48″ Longitude: 93°57′53″

UTM: 430950 m E, 5545950 m N, Zone 15.

Access: The area is crossed by the access road to Grassy Narrows (Jones Road).



Location Map GA17
Keys Lake.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Lount Lake Batholith.

Previous Geological Work: The area was mapped at reconnaissance scale by Breaks et al. (1975f, 1978) and was included in a compilation by Thurston and Bartlett (1981) The area was examined by Boulet (1983).

Geology: The rock in this area is coarse-grained, porphyritic, pinkish grey biotite granite. There are several locations near this sample site where similar granite has been found. The rock commonly has a grey, fine- to medium-grained, biotite granite matrix with pink feldspar megacrysts up to 2 cm. The megacrysts are aligned in an east-northeast to east direction. The size and concentration of the megacrysts varies slightly over the outcrop area examined.

An area of uniform granite 600 m in an east-west direction and 300 m in a north-south direction was identified. There are widely spaced joints usually 3 m or greater; the trend of these in the sample area is 075° to 095° but northeast and southeast directions are common in similar outcrops to the south. Schlieren and small knots are found in a few places; these trend 070°. Patch pegmatites are not common but do occur.

Samples indicated on the location map were described by Boulet (1983). The rock is classified as a granite on the Streckeisen diagram. It polishes well. Deleterious minerals were not seen in the samples examined. The megacryst content varies from a minimum of 10-15% near the edge of the body to 50% in the centre, the colour becomes more pinkish as the megacryst content increases.

Samples

83-97

History: There has been no recorded bedrock extraction in this area.

References

NTS Map 52K/4
Boulet (1983)
Breaks et al. (1975, 1978)
Thurston and Bartlett (1981)

GA18 BYPASS GNEISS

Commodity: Variegated granite (gneiss)

Colour: Pink, variegated.

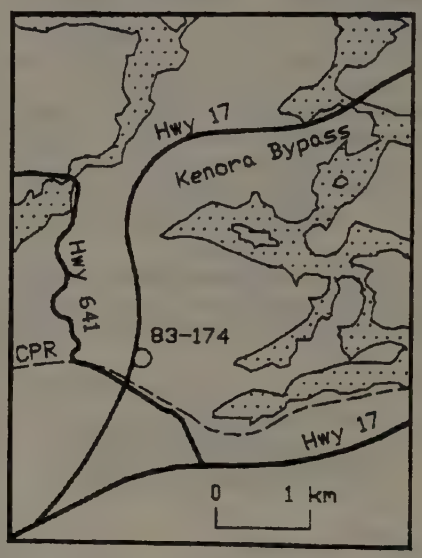
Fracture: Joints are wide spaced, sheeting is 1 to 2 m.

Texture: Gneissic

Group: II

Location: Lot 6 concession I, Pellatt Township, District of Kenora. The CPR crossing on the Highway 17 Kenora Bypass was taken as a location point.

NTS: 52E/15SE
Latitude: 49°45′15″ Longitude: 94°38′17″
UTM: 382000 m E, 5512400 m N, Zone 15



Location Map GA18 — Bypass Gneiss.

Access: The deposit is crossed by the Highway 17 Kenora Bypass.

DESCRIPTION

Geological Setting: The area is underlain by gneissic, felsic to intermediate supracrustal rocks of the English River Subprovince.

Previous Geological Work: The area was mapped by Breaks et al. (1975, 1978) and Gower (1978).

Geology: The gneissic rocks are exposed in a series of road cuts along the Highway 17 Kenora Bypass to the east of the CPR crossing. The gneiss has a strong uniform gneissic layering trending 085°/75°N. The layers are 3 to 15 mm in thickness and have sharp interlayer contacts. The gneiss is light grey to pink in colour; the pink variety makes up 25 to 30% of the total exposure. Occasional pegmatite or amphibolite layers are present. Wide

spaced (15 m) joints trending 010° are present. There are a few fractures parallel to the gneissosity. Sheeting is 1 to 2 m in thickness. Feldspar megacrysts are present within the leucocratic layers; in places they are up to 1 cm in width. Uniform gneiss is exposed for 800 m along the highway; its strike length is undetermined. The pink material is restricted to the south 500 m of the exposure. To the north the gneissosity is less uniform and more pegmatite dikes and amphibolite bodies are present.

Petrology: The sample examined (83-174) is from the pink part of the gneiss unit. Mafic layers make up 50% of the rock. These layers are composed of 50% biotite with the remainder being quartz and feldspar. Feldspar megacrysts are present in both the leucocratic and melanocratic layers. These have displaced the biotite. The rock polishes with minimal plucking of the mafic minerals. Modal analysis indicates a composition of granite; megacrysts of both potassium and plagioclase feldspars are present.

History: There has been no recorded quarrying of this rock.

References

NTS Map 52E/15
Breaks et al. (1975; 1978)
Gower (1978)

GA19 CHANCELLOR LAKE GRANITE

Commodity: Granite

Colour: Pale Pink

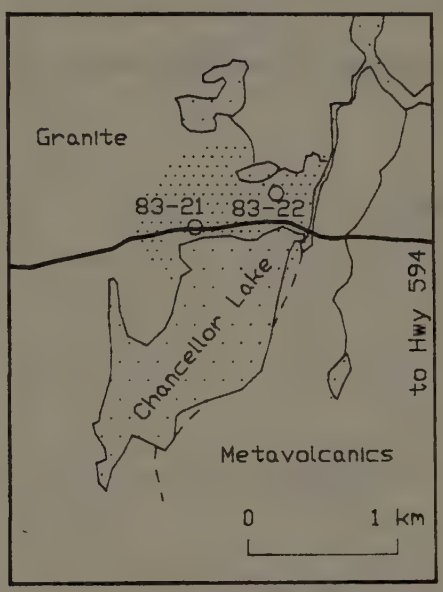
Fracture: Joints are spaced 2 m and greater, sheeting is greater than 1 m.

Texture: Massive

Group: II

Location: District of Kenora. The deposit is located on the north shore of Chancellor Lake, the outlet of Chancellor Lake was taken as a location point.

NTS: 52F/11 SE
Latitude: 49°34′48″ Longitude: 93°12′31″
UTM: 485000 m E, 5491800 m N, Zone 15.



***Location Map GA19** — Chancellor Lake Granite.*

Access: The deposit is 35 km southwest of Dryden and can be reached by forest access roads from Hwy 502.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Atikwa Batholith.

Previous Geological Work: The area was mapped by Moorhouse (1941) as "biotite and hornblende granite".

Geology: The rock is massive, medium-grained, pale pink in colour. Exposures along the north end in logged areas are good but there is little exposed in the bush. There is little or no obvious foliation in the outcrop but the polished sample does show a weak preferred orientation due to the biotite flakes. Vertical

joint directions are 015-035°, 060° and 100-130°. The 060° set is less common than the other sets. Joint spacing is 2m and greater. The sheeting is not exposed but is apparently thick (greater than 1 m) at the surface. Overburden varies from 0.5 to several metres in thickness.

Petrology: The rock polishes well with minimal plucking of biotite. The colour is predominantly pink with a pale green tint to some of the feldspar. The rock has a granular texture and grain size of 2 to 5 mm. The quartz is clear and colourless; potassium feldspar is pale pink; plagioclase feldspar is white to pale green; all look fresh. Modal analysis of sample 83-21 indicates a composition of: quartz 29.5%, potassium feldspar 29.5%, plagioclase feldspar 39%, biotite 2%. This corresponds to granite in the Streckeisen classification. There is no visible foliation.

Samples

83-21, 83-22

History: There has been no recorded quarrying of this rock.

References

NTS Map 52F/11
Moorhouse (1941)

GA20 DORE LAKE

Commodity: Granite

Colour: White to light grey

Fracture: The main joint set spacings are 1 to 2 m. Additional joints at several orientations and spacings are present. Sheeting is 1 to 2 m.

Texture: Massive

Group: II

Location: District of Kenora. Sample location 83-221 was taken as a location point.

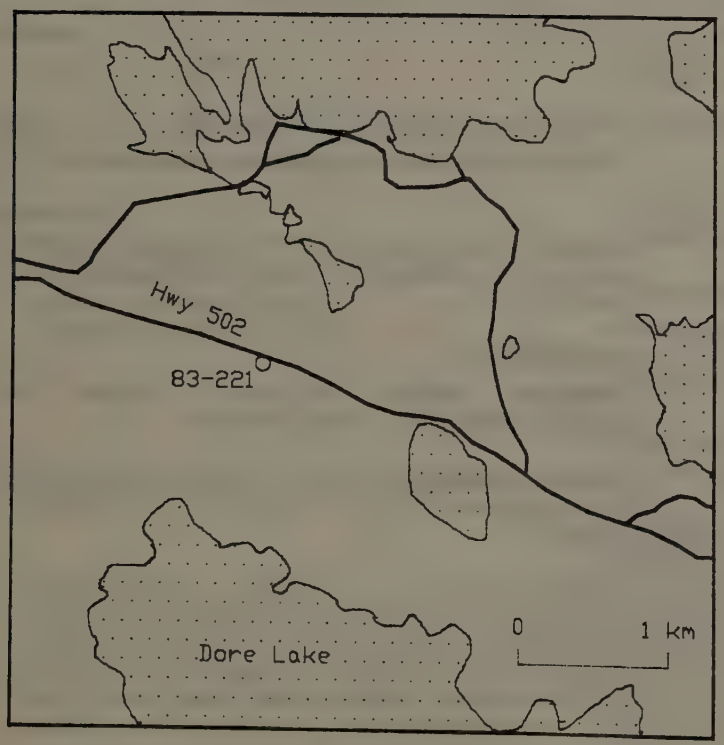
NTS: 52F/10 NW
Latitude: 49°39′43″ Longitude: 92°50′11″
UTM: 511800 m E, 5500800 m N, Zone 15

Access: The deposit is crossed by Highway 502.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Atikwa Batholith.

Previous Geological Work: The area was mapped by Satterly (1943) who described the rock: "the grey quartz diorite is typically a massive, medium-grained, light to grey-coloured rock composed of feldspar, quartz, and biotite. This rock is commonly called a grey granite."



Location Map GA20
Dore Lake.

Geology: The granite is exposed in several road cuts on Highway 502 and in a ridge immediately to the west of the highway. The granite is white to light grey in colour, similar to the Revell Batholith. A weak subvertical foliation trends 060° to 070° in parts of the exposure. Several joint directions are visible in the granite; 050°/80°S and 355°/90° are the dominant sets. The former are spaced 1 to 2 m and the latter in groups of several very close spaced (4 to 10 cm) joints separated by 3 to 6 m. Other joints sets are 110°/90°, 100°/40°N, 140°/65°N, 325°/50°E as isolated joints. The sheeting is 1 to 2 m in the road cuts and appears to increase in thickness with depth. The granite contains a few small knots of mafic minerals and a few small patch pegmatites (containing minor muscovite and garnet). There is a small amount of pyrite in some of the joints, resulting in rusty weathered surfaces. The fresh granite shows a very slight pink tint on the surface where it has been exposed to weathering for several years.

Samples

82-185, 82-221

History: There has been no recorded quarrying of this rock.

References

NTS Map 52F/10
Satterly (1943)

GA21 HILLOCK LAKE AREA

Commodity: Granite

Colour: Pink

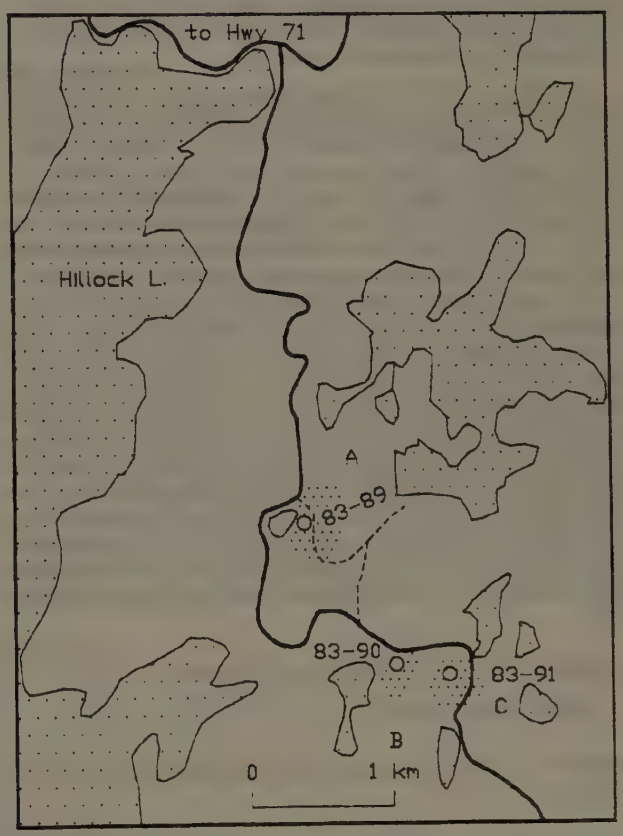
Fracture: Joints are spaced 6 m and more, sheeting is 1 to 2 m and more.

Texture: Massive

Group: I

Location: District of Kenora. Sample location 83-89 was taken as a location point.

NTS: 52F/12NW
Latitude: 49°39′23″ Longitude: 93°52′09″
UTM: 437200 m E, 5500650 m N, Zone 15.



***Location Map GA21** — Hillock Lake.*

Access: The deposit is reached by a logging road extending east from Highway 71.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Dryberry Batholith.

Previous Geological Work: The area has not been mapped but was covered by a compilation by Blackburn et al. (1981) and reconnaissances by Ziehlke (1975) and Boulet (1983).

Geology: In the north part (A on location map) of the area pink granite is exposed in a large hill. The granite is massive, deep pink in colour with a uniform granitic texture. Joint directions in the area examined are 020°-025°/90° and 060°-075°/90°. A wide spaced joint set 120°/90° is also present but only a few of these were seen. Joint spacing is 6 m for the 020° set and wider for the 060° and 120° sets. The 020° to 025° direction is the dominant one. Sheeting is well exposed on the hillside. The top sheet is 0.5 m thick, the second is 1 m; sheets appear at 3 to 4.5 m intervals in the hillside. These thick sheets are subdivided by 1 to 2 m lesser sheets.

To the south of the main exposure grey granitoid inclusions, mafic schlieren and pegmatite become common. These are absent from the sample area. Joints become closer spaced and more variable in orientation. The granite remains massive but the colour is paler. The pink area is approximately 400 m^2 of which most is uniform in colour and texture. The south part of the area comprises massive pink granite (C on location map) similar to the north part, massive light grey granite, and nebulitic pink and grey variegated granite (B on location map) in an area 500 m^2. Joints in this part of the area are widely spaced; often large areas of the granite do not have obvious joints. Major joint directions are 040°/90° and 130°/90° (outcrop A), 050° (outcrop B) and 030°-040°/90°, 055°/90° and 155°/90° (outcrop C). Sheeting is 2 m in thickness where it is observed. The pink granite forms about half of the exposure with variegated and grey granite forming the rest. The grey granite forms only a small part of the exposed rock.

Samples

83-89, 83-90, 83-91

History: There has been no recorded quarrying in this area.

References

NTS Map 52F/12
Boulet (1983)
Blackburn et al. (1981)
Ziehlke (1975)

GA22 ISLAND LAKE

Commodity: Black granite

Colour: Dark grey

Fracture: Joints are spaced 1 to 2 m, often more. Sheeting is 1 m at the surface and thickens with depth.

Texture: Massive

Group: II

Location: Haycock Township, District of Kenora. The intersection of the Jones Road and the Trans Canada Pipeline was taken as a location point.

NTS: 52E/16SW
Latitude: 49°48′35″ Longitude: 94°17′30″
UTM: 407050 m E, 5518100 m N, Zone 15

Access: The deposit is 15 km northeast of Kenora and is exposed along the pipeline.

DESCRIPTION

Geological Setting: The area is underlain by mafic intrusive rocks.

Previous Geological Work: The area was mapped at a reconnaissance scale by Lawson (1886) and in more detail by King (1983b).

Geology: The rock is dark grey massive diorite; grain size is 1 to 4 mm. The major joint systems are oriented 020°-030°, 080° and 165°. Joint spacing varies from close (10-20 cm) to wide (no visible joints in an outcrop 30 to 40 m wide). Average spacing is 1 to 2 m. Joint surfaces often weather rusty. The common sheeting spacing is 1 m in the surface exposures. The rock is slightly magnetic and has the odd pyrite grain in it. A few quartz veins cut the diorite.

The south part of the area shows abundant aplitic granitoid material cutting and apparently absorbing the diorite. Exposures are good but the surface is often lichen covered. The rock polishes well but the high biotite content makes it prone to scratching and plucking during polishing. The colour is dark grey. Estimated mineralogy is: clear colourless quartz 20%, grey plagioclase 40%, biotite and hornblende 40% The mafic minerals have a slight greenish tint that is particularly visible on the ground surface.

Samples

83-42, 83-43

History: There has been no recorded quarrying of this rock.

References

NTS Map 52 E/16
Blackburn et al. (1981)
King (1983b)
Lawson (1886)

GA23 QUETICO FAULT GNEISS

Commodity: Variegated granite

Colour: Pink

Fracture: Joints are spaced 1 to 2 m, sheeting is 1 m at the surface.

Texture: Gneissic

Group: II

Location: Lots 8 and 9, concessions IV and V, Dance Township, District of Rainy River.

NTS: 52C/13SE
Latitude: 48°47′44′ Longitude: 93°40′14″
UTM: 450750 m E, 5404650 m N, Zone 15.

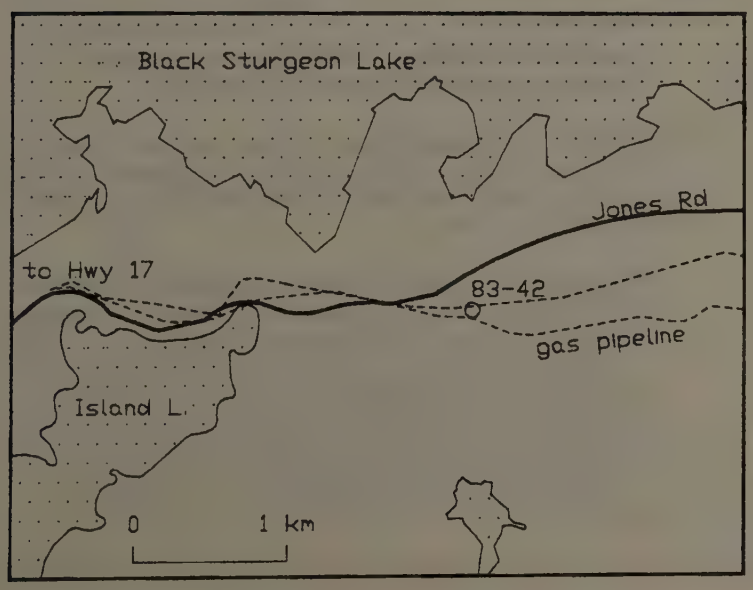
Access: The rock unit is crossed by Highway 613.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks cut by the Quetico Fault Zone.

Previous Geological Work: The area was mapped by Smith and Barlow (1887) and Davies (1973). The rock was described by Davies as follows:

"Alternate pink and grey layers, 1 to 2 inches wide, are typical of the banded rocks. The pink layers have more potassic feldspar and less biotite than the slightly coarser grey layers. In well exposed outcrops many of the layers may be seen to pinch out over a length of 10 to 20 feet. Larger feldspar crystals have developed along certain of the layers and are up to 15 mm long in some rocks. Typically, the rock consists of grains of plagioclase and potassic feldspar about 0.5 to 1.5 mm long, set in a matrix of finer grained plagioclase, quartz, and potassic feldspar. The coarser plagioclase grains are mostly twinned, cracked and strained and have incipient



Location Map GA22
Island Lake.

alteration to albite and sericite. The matrix plagioclase grains average 0.1 mm long, are untwinned and are intergrown with quartz. Biotite grains are mostly less than 1 mm long and only slightly oriented parallel to schistosity. Epidote is a common accessory mineral and magnetite, apatite, and sphene are also present."

Geology: The rock is exposed in a ridge that crosses the highway. The rock is well foliated 080°/90°, often with distinct layering 0.5 to 2 cm in thickness. The dominant colour is pink to pinkish grey, the more mafic-rich layers have a light green colour. Joints spaced approximately 1 m trend 180°/90°; there are fractures roughly parallel to the foliation. The rock will split into slabs 5 to 8 cm in thickness in the north part of the exposed area; it polishes well, the texture shows up well on the polished surface.

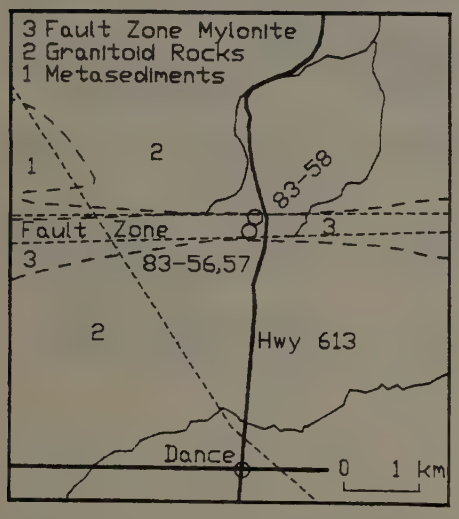
Samples

83-58

History: There has been no recorded quarrying of this rock.

References

NTS 52C/13
Davies (1973)
Smith and Barlow (1887)



***Location Map GA23** — Quetico Fault Gneiss.*

GA24 SAND LAKE ROAD GNEISS

Commodity: Variegated granite

Colour: Pink

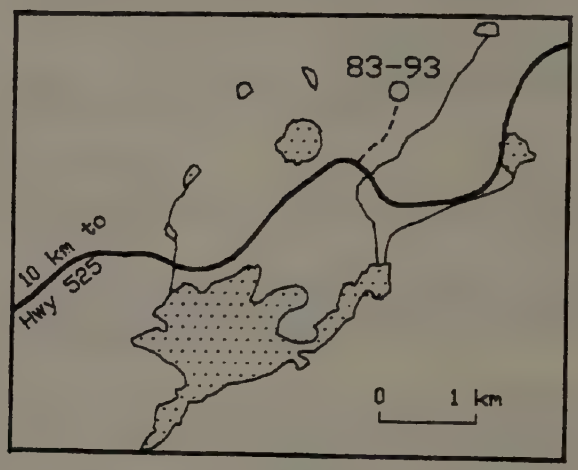
Fracture: Wide spaced joints, sheeting is not exposed.

Texture: Gneissic

Group: II

Location: North of Minaki, District of Kenora. Sample location 83-93 was used as a location point.

NTS: 52L/2NE
Latitude: 50°10′02″ Longitude: 94°47′32″
UTM: 376700 m E, 5558900 m N, Zone 15.



***Location Map GA24** — Sand Lake Road Gneiss.*

Access: The area is 600 m northeast of the Sand Lake road, 10 km east of Highway 525.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Lount Lake Batholith.

Previous Geological Work: The area was mapped by Breaks et al. (1975e, 1978) at a reconnaissance scale and was included in a compilation by Thurston and Bartlett (1981)

Geology: The rocks comprise massive pink biotite granite with abundant pegmatites intruding gneissic granitoid rocks. The gneissic rocks appear as large schlieren in the pink biotite granite, becoming progressively more dominant to the north of the area. The gneissosity trends 070° to 090° in the area north of the massive granite. The layering is even with pink leucocratic material predominant. The gneissic rock exposed covers an undetermined area at least 300 m wide.

Samples

83-93

History: There is no record of quarrying of this rock.

References

NTS Map 52L/2
Breaks et al. (1975e, 1978)
Thurston and Bartlett (1981)

GA25 SCOTT ISLANDS

Commodity: Granite/black granite

Colour: Blue-green

Fracture: Joint spacing is generally 1 to 2 m, sheeting is 0.5 to 2 m.

Texture: Massive

Group: II

Location: Seine Bay of Rainy Lake, District of Rainy River. Outcrop station D was used as a location point.

NTS: 52C/10 NW
Latitude: 48°38′30″ Longitude: 92°55′47″
UTM: 505200 m E, 5387350 m N, Zone 15.

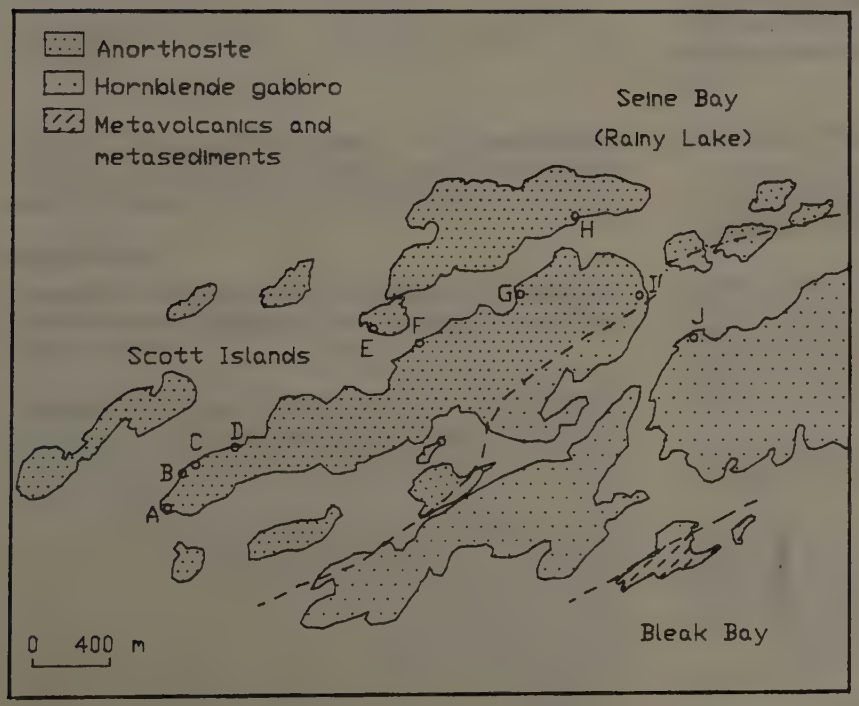
Access: The deposit is reached from Rainy Lake.

DESCRIPTION

Geological Setting: The area is underlain by mafic intrusive rocks of the Bad Vermilion Lake Intrusion.

Previous Geological Work: The area was mapped by Lawson (1888, 1913) and Harris (1974). The following description is from Harris:

"The rock consists of large rounded crystals which in the field resemble plagioclase crystals and which range in size from 1/4 inch to 4 inches with an average diameter of 1/2 inch. The crystals are cut by abundant subparallel open tension fractures which may have been developed during regional metamorphism. In thin section, the plagioclase was found to have been completely altered to a fine-grained (0.20



Location Map GA25
Scott Islands.

mm) mat of zoisite, quartz, and chlorite. The interstitial anhedral ferromagnesian minerals are completely altered to a fine-grained chlorite .... In some outcrops, the anorthosite contains anorthosite inclusions which have a different colour index or texture from the host anorthosite. Inclusions of mafic metavolcanics were also seen in the anorthosite with the largest inclusion measuring 10 feet by 50 feet. Numerous chloritic shear zones from 1 inch to 3 feet wide are in the anorthosite. These shear zones are subparallel to the southern contact and trend north-northeast. Near the contact the anorthosite commonly contains disseminated flakes of green fuchsite which was mistaken by the author for malachite when first observed. The anorthosite is cut by narrow dikes of fine-grained gabbro and aphanitic to fine-grained aplite. The contact between the anorthosite and medium-grained gabbro to the south is marked by a narrow chloritic shear zone or a complex breccia zone up to 500 feet wide. The breccia zone, which is well exposed on the east end of the large island south of Scott Island, is a complex mixture of anorthosite, fine- to medium-grained gabbro, and medium-grained white granite."

Geology: The anorthosite body is well exposed and accessible on the Scott Islands. The intrusion extends eastward along Bad Vermilion Lake (Wood et al. 1980). Vertical joint sets trending 010°, 030-060°, 070-085°, 130-150° and 160° are present in the rock but not all in the same location. The list of stations in Table 3.3 shows the joint systems present at each site. Joint spacing varies from less than 1 m to 2 m; much of the jointing is spaced 1.5 to 2 m apart. Sheeting is 0.5 to 2 m throughout the body. The rock is porphyritic with rounded, pale greenish white, altered feldspar phenocrysts (megacrysts) making up 50% of the rock. The anorthosite is for the most part massive but weak layering of phenocrysts trending 045° was noted at station D. the thickness of the layers was not exposed. A 2 to 5 mm rusty rind is developed on some of the exposures particularly the groundmass. Inclusions and shear zones as noted by Harris were found.

TABLE 3.3. DESCRIPTIONS OF OUTCROP STATIONS ON SCOTT ISLANDS.

A. Light grey to white feldspar phenocrysts in a grey slightly chloritic matrix. Joints 008°/90°, 085°/90°.

B. Large feldspar phenocrysts up to 10 cm in diameter make up 50% of the rock. In places a 2 to 4 mm rusty weathering rind is developed on the surface. Joints trending 070°/90° and 146°/90° are spaced 1 to 2 m apart, sheets are 2 m apart. The rock is light grey in colour.

C. Joints 160°/90° are spaced 1 to 2 m. A 0.3 to 0.6 m shear zone trends 080°/90°. Rock is similar to stations A and B.

D. Sample 83-71. Joints trend 030° to 060°/90° and 160°/90°. 2 to 3 cm feldspar phenocrysts make up 15 to 20% of the rock. The phenocrysts form a weak layering trending 045°. The outcrop is cut by a 3 m wide shear zone trending 055°.

E. Joints trend 070°/65°, 130°/90°, 160°/90°. The rock is light grey to blue-grey in colour.

F. Joints trend 140°/90° and 070°/90° and have spacing of 0.5 to 1 m. Rock is porphyritic as at previous stations but phenocrysts are slightly greenish in colour and form masses 10 cm wide and 20 to 30 cm long.

G. Rounded phenocrysts 1 to 8 cm in diameter form 80% of the rock; in places it is all phenocrysts. The matrix weathers slightly rusty. This outcrop shows a dark green mafic xenolith. Joints trend 012°, 030° and 150° all vertical; they are spaced 1 m or more.

H. Sample 83-72. Shear zone 3 m wide trends 275°/85°S; the rock is very soft and fissile. The undeformed rock is similar to the previous outcrops. The sample was taken from the shear zone. Quartz vein material is found along the south side of the shear zone.

I. Sample 83-73. Breccia zone; all phenocrysts are broken into small pieces, the matrix is chloritic. The rock contains a few small dark green chloritic inclusions.

J. Hornblende gabbro as shown by Harris (1974).

Samples

83-71, 83-72, 83-73

History: There has been no recorded extraction of this rock.

References

NTS Map 52C/10
Harris (1974)
Lawson (1888, 1913)

GA26 SHENSTON TOWNSHIP DIABASE

Commodity: Black granite

Colour: Dark grey

Fracture: Joint spacing is 0.5 to 1.5 m, sheeting is 1 m and greater.

Texture: Massive

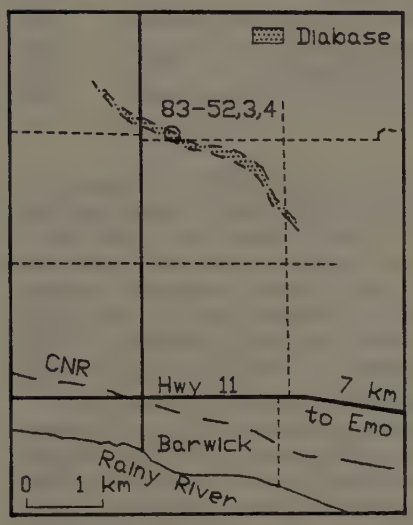
Group: II

Location: Lot 12, concession II and III, Dobie Township, District of Rainy River.

NTS: 52C/12NW

Latitude: 48°40′42″ Longitude: 93°58′45″

UTM: 427900 m E, 5391950 m N, Zone 15.



***Location Map GA26** — Shenston Township Diabase.*

Access: The deposit is crossed by a township road. The dike is crossed by several other roads to the west in Shenston and Pattullo Townships.

DESCRIPTION

Geological Setting: The deposit is a Proterozoic (Keweenawan) diabase dike hosted by Archean metavolcanics.

Previous Geological Work: The area was examined by Lawson (1890) and mapped by Fletcher and Irvine (1954). The following description is from Fletcher and Irvine (p.21):

"The dikes, as indicated by the distribution of outcrops, have remarkable continuity at a bearing of N.45°W. Two are apparently continuous for distances of over 20 miles, and several others have been traced for about five miles. The major dikes range from 100 to 200 feet wide, but smaller dikes ranging from a few inches to 6 feet wide are also common. A hummocky appearance along strike is characteristic of the dikes, and in the larger ones, this is often clearly visible on air photographs. It results from the removal, by glacial action, of slabs or columns of the diabase freed by cooling joints developed normal to the dike walls. The dike rock is fine-grained along the margins of the intrusive, becoming medium- to coarse-grained in the central parts. It is dark greenish-grey in colour and weathers a distinctive brown. Microscopic examination shows it to be composed of labradorite, augite, interstitial quartz, and accessory magnetite and sulphides. The augite is partially uralitized. Diabasic or intergranular texture is well developed."

Geology: Where examined the diabase shows five distinct zones: a narrow porphyritic chilled margin on each side, a fine-grained porphyritic zone (presumably on each side) and a wide medium- to coarse-grained central zone. The porphyritic zones contain 2 to 5% feldspar phenocrysts 0.5 to 5 mm in length. The zones grade into each other over distances of 1 to 2 m. The combined chill margin and fine-grained porphyritic zone are 23 m in width at the point examined. The central zone is non-porphyritic and up to 5 mm in grain size. Traces of disseminated pyrite are present.

Joint sets 055-070°/80°N, 350-000°/85°W and 100°/90° are present, the latter is found in the central part of the dike. Joint spacing is 0.5 to 1.5 m with the central part of the dike having the widest spacing. The margins often have very close spaced joints (15 cm). The joint directions vary along the length of the dike. The rock polishes well to a dark green colour. A small amount of pyrite is visible on the polished surface but these did not appear as rusty spots on the weathered surface.

Samples

83-52, 83-53, 83-54

History: There has been no recorded extraction of this rock.

References

NTS Map 52C/12
Fletcher and Irvine (1955)
Lawson (1890)

GA27 WONDERLAND LAKE AREA

Commodity: Granite

Colour: Pink/brown

Fracture: Joint spacing is generally 10 m and more, sheeting is 1 m at surface and thickens with depth.

Texture: Massive

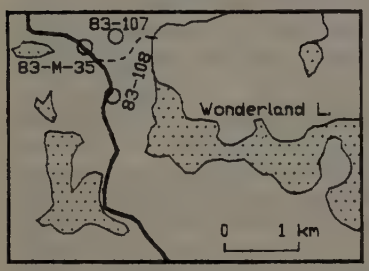
Group: I

Location: District of Kenora. The northwest tip of Wonderland Lake was taken as a location point.

NTS: 52L/1SE

Latitude: 50°05′28″ Longitude: 94°11′14″

UTM: 415100 m E, 5549100 m N, Zone 15.



***Location Map GA27** — Wonderland Lake Area.*

Access: The area is reached by an old logging road that extends northwest from the Jones Road 15 km northeast of the CNR crossing.

DESCRIPTION

Geological Setting: The area is underlain by granitoid rocks of the Lount Lake Batholith.

Previous Geological Work: The area was mapped at a reconnaissance scale by Breaks et al. (1975f) and was included in a compilation by Thurston and Bartlett (1981). Part of the batholith was examined by Beakhouse et al. (1983); the granite was examined at a reconnaissance scale by Boulet (1983).

Geology: The rock is pink to pink-brown megacrystic biotite granite, exposed in large ridges on either side of the road. The vertical joint sets trend 045-060° and 145-160°. These are wide spaced often 10 m or more. The 060° direction is the predominant set; sheeting is 0.5 to 1 m at the surface and appears to thicken with depth. A preferred orientation of the feldspar megacrysts is present in all the exposures. Mafic inclusions and narrow pegmatites are aligned parallel to the preferred orientation. Large schlieren are present near the east margin of the deposit; an abrupt increase in schlieren from occasional to predominant marks the east limit of the granite. The south limit is marked by a sudden increase in pegmatite frequency. The deposit has minimum dimensions of 760 m in a north-south direction and 400 m in an east-west direction; it appears to be open to the north and west. There are a few minor pegmatites and schlieren near the centre of the deposit. The texture is uniform but the colour darkens to the south. There are two distinct colours available: pink in the vicinity of samples 83-107 and 83-M-35, and pink-brown in the vicinity of sample 83-108. The colour variation follows the preferred orientation of the feldspars.

Samples

82-M-35, 83-107, 83-108

History: There has been no recorded quarrying of this granite.

References

NTS Map 52L/1
Beakhouse et al. (1983)
Boulet (1983)
Breaks et al. (1975f, 1978)
Thurston and Barlett (1981)

4. Flagstone and Slate (Including Mariposite)

Slaty rocks and flagstone have been produced from the northern part of Lake of the Woods since 1884. The production from four deposits has been on a small scale, for local construction use only. These are Slate Island (Gibbons' Slate Quarry) in 1884, the Northern Peninsula area in the 1970s, Rainbow Quarry near Hudson in the 1970s, and the Rush Bay Quarries deposit in Forgie Township which is currently in production (Table 4.1).

TABLE 4.1. FLAGSTONE, SLATE AND MARIPOSITE DEPOSITS IN NW ONTARIO.

F1	Gibbons' Slate Quarry
F2	Rainbow Quarry
F3	Rush Bay Quarry
F4	Graphic Lake Area
F5	Highway 72 Area
F6	Northern Peninsula Mariposite
F7	Yellow Girl Bay - Shore Island
F8	Kawashegamuk Lake Mariposite

Flagstone is simply a fine-grained rock that splits into thin slabs (Currier 1960). This may be true slate or any other fine-grained, well foliated or thinly layered rock. The past producers on Lake of the Woods quarried flagstone deposits other than true slate. Another term for this material is freestone, i.e. "a flat slab of flagstone used for paving" (American Geological Institute *Glossary of Geology*).

To produce an even thickness of split slabs, flagstone must be developed from a uniformly fine-grained rock. The colour of the rock is not as important as its ability to split uniformly. Felsic metavolcanics and sandstone-type metasediments result in a flagstone with a harder surface and more even parting than other rock types. Uniform grain size results in a straight foliation surface. Rocks such as lapilli tuff have fragments which are harder to deform than the matrix, resulting in a wavy foliation that does not give slabs of a uniform thickness and in some cases makes splitting difficult. Most flagstone is found in and near shear zones. The deposits are narrow and vary in fissility depending on the original lithology and degree of deformation.

The material currently produced by Rush Bay Quarries is a fine grained felsic tuff which has been sheared, resulting in a strong foliation over a narrow width. It has a rusty brown colour developed along the foliation surface due to weathering of sulphide minerals. The other flagstone areas around the north part of Lake of the Woods are composed of both metavolcanics and metasediments but all have been affected by shearing and to a lesser extent folding. The rocks that show the strongest foliation and best cleavage were initially fine grained.

The definition of slate as published by the American Geological Institute is: "a compact, fine grained, metamorphic rock formed from such rocks as shale and volcanic ash, which possess the property of fissility along planes independent of the original bedding (slaty cleavage), whereby they can be parted into plates which are lithologically indistinguishable". The term is usually restricted to initially fine-grained sedimentary rocks such as mudstone or shale which have been metamorphosed and have developed a slaty cleavage. Many metasediments were initially fine grained but unless they have developed a slaty cleavage they should not be called slate. Small amounts of slate are commonly intercalated with greywacke and sandstone-type metasediments. There are no current slate producers in the area but the Yellow Girl Bay area of Lake of the Woods contains considerable thicknesses of metasediments of which a relatively large part (25%) is slate.

The mineralogy of slate is quite variable (Currier 1960, Winkler 1979). The essential components are minerals that have a platy habit that allows them to be aligned perpendicular to the greatest principal stress and a good parallel cleavage that allows them and the rock containing them to split easily. High quality slate splits to thin sheets (6 mm) and has a hard surface. The hardness is controlled by the mineralogy; some minerals that have a good cleavage (e.g. chlorite) are not hard. X-ray diffraction analysis indicates that chlorite is a major constituent of the local slates. The slates found to date split into thin sheets but the surface is rarely hard.

Both flagstone and slate are products of deformation. In the case of flagstone the rocks have usually been sheared or faulted resulting in a strong foliation. Flagstone deposits tend to be narrow but with considerable strike length. True slate, of either sedimentary or fine-grained volcanic origin is developed as a result of stress rather than shearing. Isoclinal folds are the most common structural environment for developing slate. High stress and medium to high grade metamorphism are required to develop slate. Very fine-grained felsic metavolcanics (ash tuffs) can form a slaty cleavage when subjected to these conditions.

FLAGSTONE RECONNAISSANCE

Numerous areas of flagstone have been identified. Those deposits not described in the following section are listed by sample location in the appendix. Most rocks did not split well enough to be commercially viable or the deposits were too small in size to be considered.

The reconnaissance work indicates that there may be many other potential flagstone deposits associated with the major fault systems of the area (see Figure 1.2). These major fault zones are shown on geological compilation maps (Blackburn et al. 1981). The commercial potential of these rocks varies. A combination of fine-grained felsic metavolcanics and shearing gives the best flagstone, although most other rock types will split into reasonably uniform sheets given an intense enough deformation.

MARIPOSITE/FUCHSITE

Mariposite is included with flagstone because it has been used for similar end purposes and often occurs in deposits of well foliated, splittable rocks. Fuchsite is the chromium-bearing variety of muscovite. It can

contain up to 6% Cr_2O_3 (Deer et al. 1966). The names fuchsite and mariposite refer to essentially the same mineral. Chromium mica has a distinctive bright green colour; a small amount gives a pale green shade to the rock where disseminated, and a deep emerald green to layers where concentrated in foliation planes. The material is popular for local use but the known deposits are relatively small. Two deposit types have been noted: a quartzite – chrome mica association (Rainbow Quarry), and a chrome mica – chlorite – magnesite – quartz – carbonate vein association usually accompanied by sulphide mineralization (Northern Peninsula). The latter type of deposit is much more common. It is developed in metavolcanic terrains, sometimes associated with gold mineralization. Several examples of this type are known, including the Nuinsco Resources Ltd. gold deposits near Cameron Lake. Minor development of mariposite is quite common in and near gold occurrences. Small amounts of mariposite/fuchsite have been produced from the Lake of the Woods and Hudson areas.

RECOMMENDATIONS FOR EXPLORATION

Flagstone of varying quality occurs in all the major fault zones of the area. These zones should be examined for suitable deposits, especially where they coincide with fine-grained felsic metavolcanics or metasandstone. Exploration for good quality slates should be directed toward metasediments combined with isoclinal folding or fine-grained felsic fragmental metavolcanics in areas of moderate to high grade metamorphism.

FLAGSTONE, SLATE AND MARIPOSITE DEPOSITS

F1 GIBBONS' SLATE QUARRY

Commodity: Slate/flagstone

Status: Past producer

Location: Slate Island, Lake of the Woods, District of Kenora. Sample location 82-48 was taken as a location point.

NTS: 52E/9NW

Latitude: 49°38′26″ Longitude: 94°28′29″

UTM: 393500 m E, 5499400 m N, Zone 15.

Access: The deposit is accessible by boat from Kenora.

DESCRIPTION

Geological Setting: Intermediate to felsic metavolcanics with a well developed foliation.

Previous Geological Work: The area was mapped by Lawson (1886), Lawson et al. (1897) and Thomson (1937); it was included in a compilation by Blackburn et al. (1981). Lawson (1886) described the deposit as follows.

"In 1884 Mr. Gibbons opened a slate-quarry on an island lying to the west of Pipe-Stone Point, and during the greater portion of the summer of that year had a gang of ten men engaged in taking out slate for the Winnipeg market. The work was not continued in 1885. The slate here quarried is not, however, the best that is to be found on the lake. It is an evenly cleaving, soft, dark to glossy hydromicaceous schist, which presents unusually good facilities for quarrying due to the jointing which cuts across the planes of cleavage at definite intervals. The slate is readily cut or pierced by the slate-axe, taking an even edge, and not shattering when struck. It makes a fairly good roofing slate."

Geology: The bedrock of this area consists of intermediate to felsic pyroclastic rocks, folded into a series of synforms and antiforms (Blackburn 1981). A strong axial plane cleavage developed as a result of the folding. The rocks of Slate Island are strongly foliated 080°/90. Joints cut the foliation at right angles and are often filled by quartz veins. The rock is variable in colour from pale pinkish green to dark grey-green. The lithology is fine-grained felsic tuff with carbonate-chlorite-sericite alteration. Owing to the carbonate content, the rock is soft and easily scratched. Fine-grained fragments up to 2 mm long are visible on the broken surface in some places. These are stretched parallel to the foliation. The rock described is from the south side of Slate Island. Similar foliated tuffs occur on several small islands in the vicinity.

Samples

82-48

History: The deposit was first worked by a Mr. Gibbons in 1884. Slate was produced during the summer of that year only and sold in Winnipeg.

There is no record of production since the initial opening; material has been removed at various times for local construction uses (patios, fireplaces, etc.)

References

NTS Map 52E/9
Blackburn et al. (1981)
Lawson (1886)
Lawson et al. (1897)
Thomson (1937)

F2 RAINBOW QUARRY

Commodity: Decorative stone (mariposite)

Status: Past producer

Location: 0.8 km west of the west boundary of Vermilion Additional Township, District of Kenora.

NTS: 52K/1SW

Latitude: 50°14′53″ Longitude: 92°17′35″

UTM: 550500 m E, 5547700 m N, Zone 15.

Access: The workings can be reached by gravel road from Hudson.

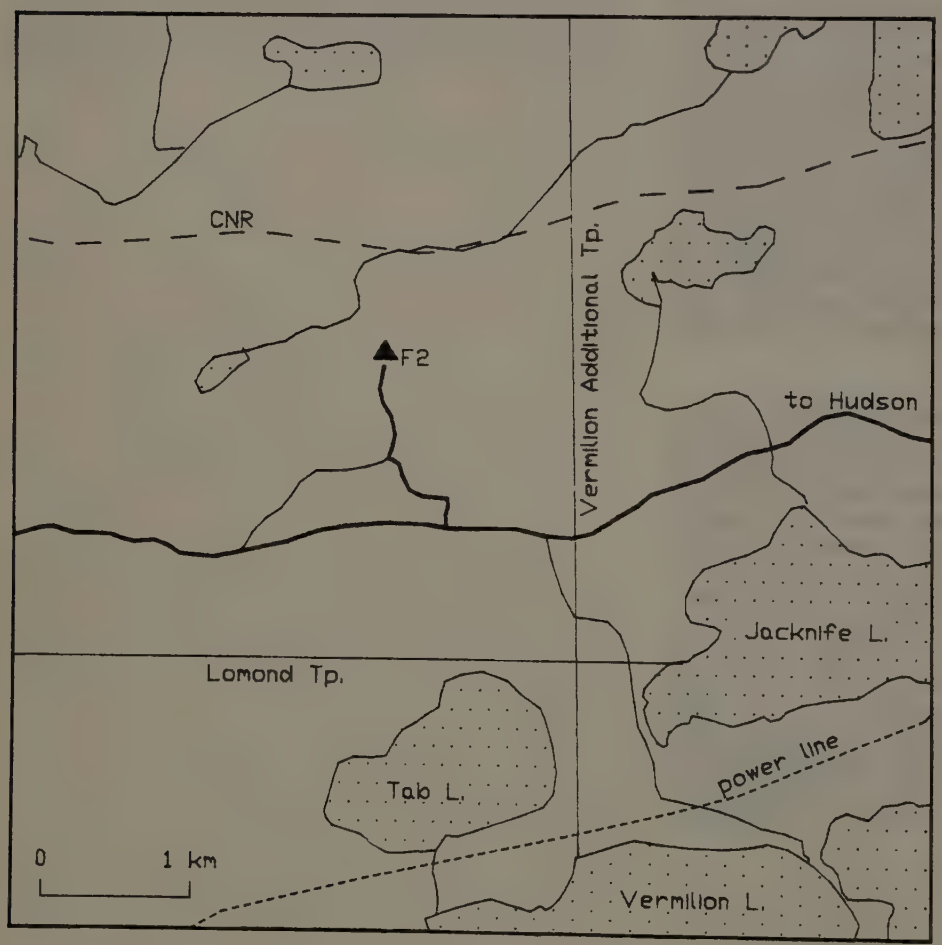
DESCRIPTION

Geological Setting: The area is underlain by mafic to intermediate metavolcanics with intercalated metasediments.

Previous Geological Work: The area has been mapped by Hurst (1933) and Johnston (1972). A description of the deposit is filed with the Sioux Lookout Resident Geologist (Ministry of Northern Development and Mines).

Geology: The deposit comprises two quartzite units with fuchsite-mariposite and sericite developed in thin layers parallel to the strike of the units. Workings consist of a trench, 46.5 m long, 3 m wide at the east end and 1 m wide at the west end, oriented parallel to the strike of the unit. The rocks exposed on the property are mafic metavolcanics, some units showing highly deformed pillows with intercalated micaceous quartzite units. A well developed foliation trends 090-095° and dips 75-80° south.

The green fuchsite-mariposite is developed in 1 to 2 mm layers parallel to the foliation separated by 2 to 10 mm. This mineral is also present in much smaller amounts throughout much of the quartzite giving most of it a bright green colour. White mica, probably sericite, is developed in the quartzite to the south of the trench. This part of the deposit is folded into many en echelon drag folds plunging 83° in direction 050°. The rock breaks readily along the foliation. Veins of white to rusty quartz cut both the quartzite and adjacent metavolcanics. Small amounts of pyrite, chalcopyrite and galena are present in these veins. The quartzite is exposed on the north limb of a northeast plunging fold and similar units without the fuchsite/mariposite occur on the south limb at the same stratigraphic level. (R. Huggins, Resource Geologist, Ministry of Northern Development and Mines, Sioux Lookout, personal communication 1982).



Location Map F2
Rainbow Quarry.

Two samples of material were submitted for X-ray diffraction mineral analysis, with the following results:

Sample	82-196	82-224
Quartz	A	A+
Plagioclase	-	?C
Muscovite	B	C

Note:
A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

Other minerals (amphibole, chlorite, talc, serpentine, dolomite, calcite, magnesite) were not detected in these samples. Sample 82-196 is quartzite with white sericite; 82-224 is quartzite with green mariposite. Both these samples consist predominantly of quartz. Sericite and mariposite/fuchsite appear as muscovite in the X-ray pattern.

Samples

82-195, 82-196, 82-197, 82-224

History: The deposit was stripped and trenched circa 1972 by Rainbow Quarries Ltd. A small amount of material was removed for ornamental purposes. The material was marketed under the name Hudson Jade. The deposit is currently (1984) under quarry permit to Rino Moretti of Sioux Lookout, Ontario.

References

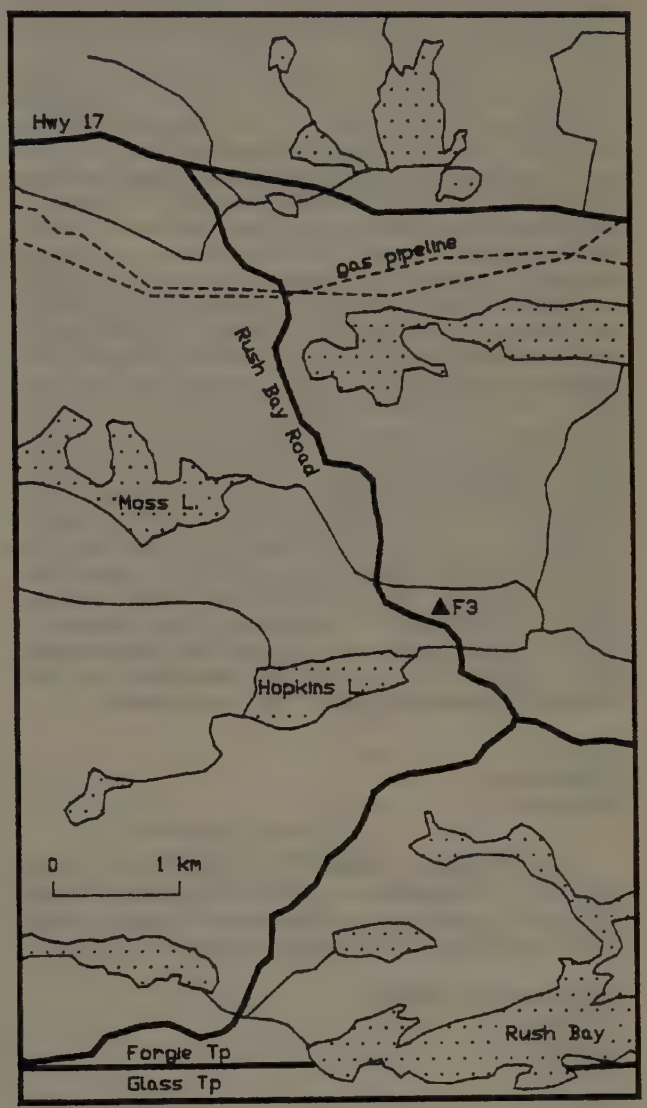
NTS Map 52K/1
Hurst (1933)
Johnston (1972)

F3 RUSH BAY QUARRY

Commodity: Flagstone

Status: Producer

Location: Forgie Township, District of Kenora
NTS: 52E/10 NW
Latitude: 49°41′33″ Longitude: 94°55′39″
UTM: 360000 m E, 550600 m N, Zone 15.



***Location Map F3** — Rush Bay Quarry.*

Access: The quarry is located on the east side of the Rush Bay Road 4.1 km south of Highway 17.

DESCRIPTION

Geological Setting: The deposit is in an east-trending shear zone cutting felsic metavolcanics.

Previous Geological Work: The area was mapped by Davies (1965) and the deposit is described in the National Mineral Inventory.

Geology: The rock extracted is fine-grained felsic tuff with varying amounts of pyrite and pyrrhotite disseminated throughout giving it a rusty weathered surface. Faulting has produced a zone 12.5 m wide of fissile schistose rock. The predominant colour of the rock is light yellow-green, stained rusty by hematite developed on the schistosity plane. The degree of fissility changes abruptly both along and across the shear zone. Material is extracted from an open cut roughly 100 m long and 10-12 m wide and up to 4 m deep. The rock is broken into 0.5 m^3 blocks by wedges and occasional small blasts, then it is split with wedges into thin (1-2 cm) sheets. A section across the deposit and associated rocks is described in Table 4.2. The predominant lithology is felsic lapilli tuff and ash tuff, often showing graded bedding fining to the south. Bedding in the fine tuff is 2-10 mm thick. Fragments up to 10 cm long and 4 cm wide occur in the coarser tuff. All the units are matrix-supported with a maximum of about 35% lapilli and larger fragments. Several thin (0.3-0.6 m) units of very fine-grained graphitic cherty sedimentary rock separate tuff units; occasional clasts of this material are found in the coarse tuff units. The rock type that makes the best flagstone is fine tuff. Lapilli and larger fragments do not deform as readily and the resulting schistosity is undulatory and difficult to split. A second shear zone in lapilli tuff demonstrates this. A sample of the rock was submitted for X-ray diffraction mineral analysis. The results were:

Quartz	A
Plagioclase	–
Muscovite	B

The dominant mineral is quartz with lesser amounts of muscovite. A sample of sulphide-bearing rock was submitted for qualitative spectrographic analysis and assay. The results are shown below:

Spectrographic analysis

Chromium	T
Manganese	T
Titanium	T
Zirconium	T
Iron	LM

No other elements were detected.
(T 0.01 to 0.10% LM 0.5 to 5.0%)

Assay

Gold	3 ppb
Silver	<2 ppm
Copper	25 ppm
Lead	18 ppm
Zinc	73 ppm

TABLE 4.2. STRATIGRAPHIC SECTION (NORTH TO SOUTH) OF THE RUSH BAY FLAGSTONE QUARRY (F3). TOPS WERE DETERMINED FROM GRADED BEDDING.

Measured interval (metres)	Description
0	(Bottom of section) Contact of shear zone at east end of quarry.
0 - 3.6	Fine felsic tuff.
3.6 - 7.4	Lapilli ash tuff with minor black chert layers.
7.4 - 8.1	Black cherty layers (1 cm layering).
8.1 - 12.5	Grey ash tuff with flattened agglomerate fragments, minor graphite fragments.
12.5 - 19.2	Lapilli tuff agglomerate 35% large fragments to 10 cm long. Large scale graded bedding fining to south.
19.2 - 20.6	Metasediments.
20.6 - 23.1	Fine-grained metasediments, in part black slate (sample 82-3).
23.1 - 30.2	Lapilli tuff.
30.2 - 33.3	Shear zone in lapilli tuff (sample 82-4).
33.3 - 43.0	Fine tuff.
43.0	Top of section.

Samples

82-2, 82-3, 82-4, 82-225

History: The deposit was developed by Rush Bay Quarries Ltd. in 1978 and is currently in operation.

References

NTS Map 52E/10
Beard and Rivett (1980)
Davies (1965)
Mineral Policy Sector, Department of Energy, Mines and Resources, Ottawa. National Mineral Inventory Document 52E/10 STN1 1981.

F4 GRAPHIC LAKE AREA

Commodity: Flagstone

Status: Occurrence

Location: The deposit is located in northwestern Work Township, District of Kenora. Sample 83-70 was used as a location point.

NTS: 52E/9 SE

Latitude: 49°36′12″ Longitude: 94°04′26″

UTM: 422350 m E, 5494850 m N, Zone 15.

Access: The area is crossed by Highway 71 and an old logging road.

DESCRIPTION

Geological Setting: The area is underlain by metasediments and minor metavolcanics, intruded by granitoid rocks.

Previous Geological Work: The area was mapped by Suffel (1931) who described the rocks as "gneissoid biotite schist."

Geology: The rock is well foliated, dark grey, biotite-bearing metasandstone. The foliation trends 060° to 065° and dips vertically. The metasediment splits into slabs as thin as 6 mm in the outcrops exposed along the highway. There is a narrow unit of amphibolite, interpreted as mafic metavolcanics by Blackburn et al. (1981) along the south margin of the metasedimentary belt. Both this rock and the metasediments split to flagstone. The area to the east of the highway including the amphibolite does not split as thinly; most slabs are 1 to 2 cm. The contact of amphibolite with granitoid rocks of the Dryberry Batholith marks the south boundary of the flagstone.

There are numerous white or light pink muscovite-quartz-feldspar pegmatites cutting the amphibolite near the contact zone. Both the amphibolite and the biotite metasediments show a rusty colour on the foliation surfaces. The colour of the fresh surface varies from light grey with black biotite layers to dark grey and black in the amphibolite. There is incipient gneissic layering developed in most of the metasediments. Often the rock splits along the biotite layers. The flagstone material is limited to an area between the north end of Graphic Lake and the contact with the Dryberry Batholith. To the north towards Gibi Lake the metasediments continue but are not fissile.

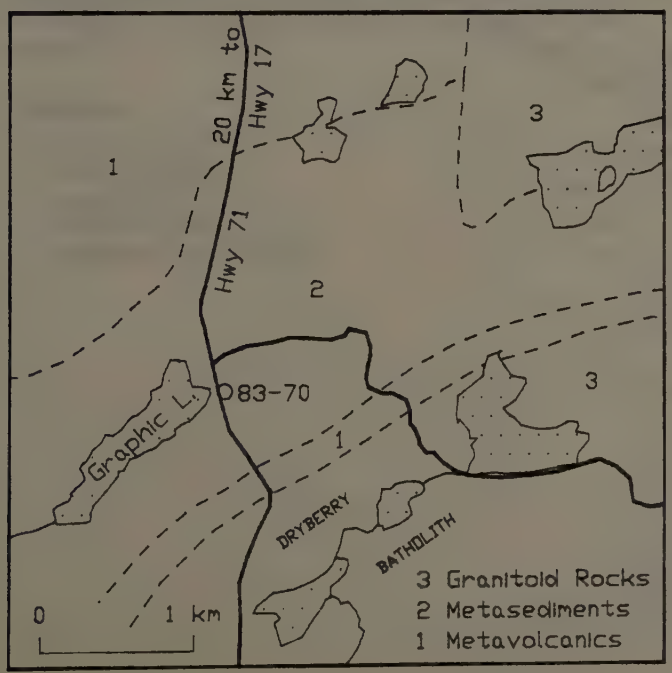
Samples

83-70

History: There has been no recorded quarrying of this rock.

References

NTS Map 52E/9
Blackburn et al. (1981)
Suffel (1931)



Location Map F4
Graphic Lake Area.

F5 HIGHWAY 72 AREA

Commodity: Flagstone

Status: Prospect

Location: Lot 7 concession IV and lot 6 concession V, Pickerel Township, District of Kenora. Sample 83-163 was taken as a location point.

NTS: 52F/16NE

Latitude: 49°57′00″ Longitude: 92°12′15″

UTM: 557100 m E, 5533200 m N, Zone 15.

Access: The deposit is crossed by Highway 72.

DESCRIPTION

Geological Setting: The area is underlain by metavolcanics and metasediments intruded by quartz - feldspar porphyry.

Previous Geological Work: The area has been mapped by Johnston (1967, 1972) Coleman (1895), Hurst (1933) and Pettijohn (1933).

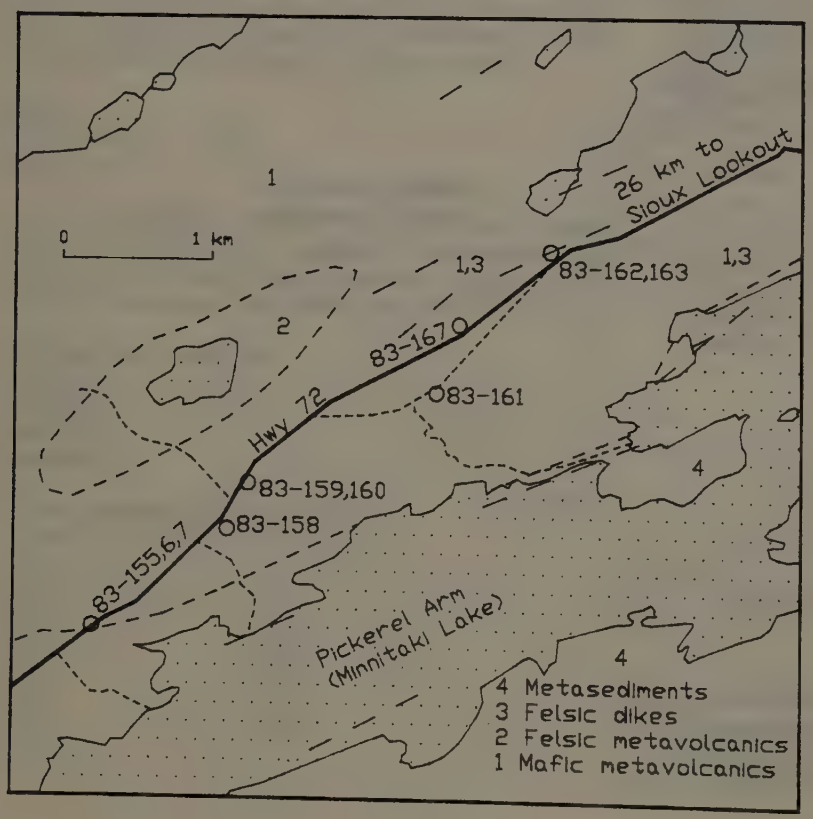
Geology: The deposit is exposed in a series of road cuts on Highway 72. The rocks are dark green pillowed mafic metavolcanics intruded by a light green quartz porphyry dike. The dike is 6 m in width and trends 070° to 075°. The contacts of the dike are sharp but somewhat irregular. A strong foliation is developed in the dike and the metavolcanic host. Both rock types are fissile but the felsic dike material splits into thinner more even sheets 0.5 to 1 cm in thickness. The foliation is strongest in the roadcut area and becomes less intense to either side of the highway. Mapping by Johnston (1969) indicates discontinuous northeast-trending fault zones in this area roughly parallel to the stratigraphy. The mafic metavolcanics are cut by several sill-like intrusive bodies of felsic rock (Johnston 1972). In addition to the faults, tight folds with axes parallel to the stratigraphy are also present in the metasediments along Pickerel Arm. Small amounts of pyrite are present in most of the metavolcanics; in a few locations this is accompanied by chalcopyrite (sample 83-160). The felsic intrusive rocks also carry small amounts of sulphides but generally less than the metavolcanics. Quartz veins cut the felsic dike near sample 83-163.

Samples

The following samples were taken in this area:

83-155 Well foliated mafic metavolcanics.
83-156 Pillowed mafic metavolcanics.
83-157 Mafic metavolcanics with sulphides.
83-158 Mafic metavolcanics with disseminated sulphides.
83-159 Well foliated mafic metavolcanics.
83-160 Same as 159 with sulphides.
83-161 Well foliated intermediate metavolcanics.
83-162 Well foliated mafic metavolcanics.
83-163 Well foliated felsic dike rock.

Two samples were submitted for trace element analyses. The results were as follows (all values in ppm except Au in ppb).



Location Map F5
Highway 72 Area.

Sample	83-157	83-160
Ag	<2	3
As	2	2
Au	6	11
Ba	120	260
Co	35	43
Cr	94	96
Cu	46	1140
Li	81	19
Ni	41	44
Pb	<10	<10
Sb	0.5	0.7
Zn	190	146

Sample 83-160 contained a small amount of chalcopyrite resulting in a large Cu anomaly.

One sample (83-163) was submitted for X-ray diffraction mineral analysis. The results were:

Chlorite	-
Mica	BC
Talc	-
Amphibole	-
Plagioclase	A
Quartz	A
Calcite	C
Dolomite	C

Note:
A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

Samples

83-158 to 83-163
83-167 Well foliated felsic dike.

History: There is no record of quarrying in this area but material has been removed from the felsic dike in the roadcut at 83-163 and used on buildings in Sioux Lookout.

References

NTS Map 52F/16
Coleman (1895)
Hurst (1933)
Pettijohn (1934)
Johnston (1969, 1972)

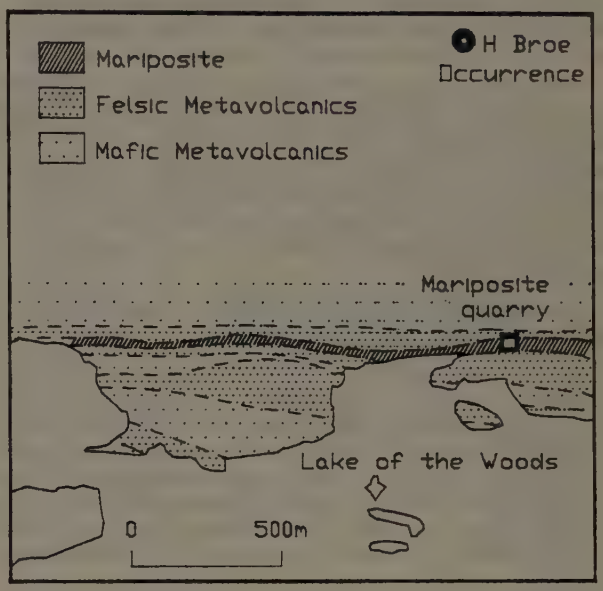
F6 NORTHERN PENINSULA MARIPOSITE

Commodity: Mariposite

Status: Past producer

Location: Northern Peninsula, Lake of the Woods, District of Kenora. The old workings were used as a location point.

NTS: 52E/10NE
Latitude: 49°39′24′ Longitude: 94°36′37″
UTM: 383700 m E, 5501500 m N, Zone 15.



***Location Map F6** — Northern Peninsula Mariposite.*

Access: The deposit can be reached by boat.

DESCRIPTION

Geological Setting: The area is underlain by metavolcanics and metasediments.

Previous Geological Work: The area was mapped by Thomson (1937). The vicinity of the deposit has been described by Chisholm (1950), Holbrooke (1949) and Szetu (1980) with respect to gold mineralization. Two brief descriptions of the mariposite by staff of the Kenora Resident Geologist's office are on file (Ministry of Northern Development and Mines).

Geology: The rocks of the mariposite deposit are highly silicified and carbonatized sheared felsic metavolcanics. Mapping and diamond drilling during gold exploration has delineated several felsic pyroclastic units trending east with minor intercalated metasediments. The mariposite zone can be traced for 1.6 km west from the quarry workings parallel to the shore (Holbrooke 1949, Chisholm 1950). Workings comprise a shallow quarry now filled with waste to within 0.3 m of the surface and small pits in the stream bed.

The rock exposed in these workings is bright green in colour with rusty weathering quartz-carbonate (ankerite) vein material. Vein material makes up approximately 10% of the rock. The rock is strongly foliated at 090° to 100° with subvertical dip. The rock immediately north of the mariposite is matrix-supported felsic lapilli tuff. Thin seams of green mariposite are present in the tuff. Black slate is exposed as part of the assemblage north of the mariposite unit. Diamond drilling further west along the strike of the deposit by Hudson Bay Exploration and Development indicated thicknesses of black slate up to 7.5 m and similar thicknesses of olive-coloured "mariposite"; the remainder was dark grey, fine-grained metasediments and felsic pyroclastic rocks.

The strong foliation present in the mariposite is also found in the felsic rocks to the north. These rocks split cleanly into 1 to 2 cm thick slabs. An additional occurrence of carbonatized mariposite schist was mentioned by Chisholm about 1 km north of the workings. This was referred to as the H. Broe occurrence by Chisholm (1950) and was located by Holbrooke (1949).

Two samples were submitted for X-ray diffraction mineral analysis. The results were:

Sample	83-103	83-122
Chlorite	B	B
Mica	B	C
Amphibole	-	?D
Quartz	A	A
Plagioclase		B
Calcite		-
Dolomite	B	A
Magnesite	A	-
Serpentine		-

Note:
A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

These results show that the olive coloured 'mariposite' is significantly different from the green material produced from the quarry. It is likely a sheared felsic metavolcanic. The position of this material in the sequence could not be determined due to disruption of the core. The mariposite contains a significant amount of magnesite.

Samples

83-103 Mariposite from main quarry .
83-121 Black slate from core.
83-122 Olive coloured 'mariposite' from core.
83-123 Rhyolite tuff flagstone.

History: The deposit was investigated for its gold potential several times. The initial discovery was prior to 1948; the first investigation was by Nor-Penn Mines Ltd. in 1948, the second by Hudson Bay Exploration and Development in 1974 and the third by Raleigh Minerals Ltd. in 1980. The deposit was quarried for decorative stone material for local construction by J. W. Cambell in 1972 and I. McLandress from 1973 to 1976; one shipment was sent to Texas by the owner of a summer resort adjacent to the property.

References

NTS Map 52E/10
Assessment Files, Resident Geologist's Office, Ministry of Northern Development and Mines, Kenora.
Chisholm (1950)
Holbrooke (1949)
Thomson (1937)
Szetu (1980)

F7 YELLOW GIRL BAY – SHORE ISLAND

Commodity: Slate/flagstone

Status: Occurrence

Location: West of Eastern Peninsula, Lake of the Woods, Kenora District. The end of Yellow Girl Point was taken as a location point.

NTS: 52E/8NE, 52E/9SW and 52E/9SE

Latitude: 49°30′52″ Longitude: 94°20′01″

UTM: 403400 m E, 5485250 m N, Zone 15

Access: The area can be reached by boat.

DESCRIPTION

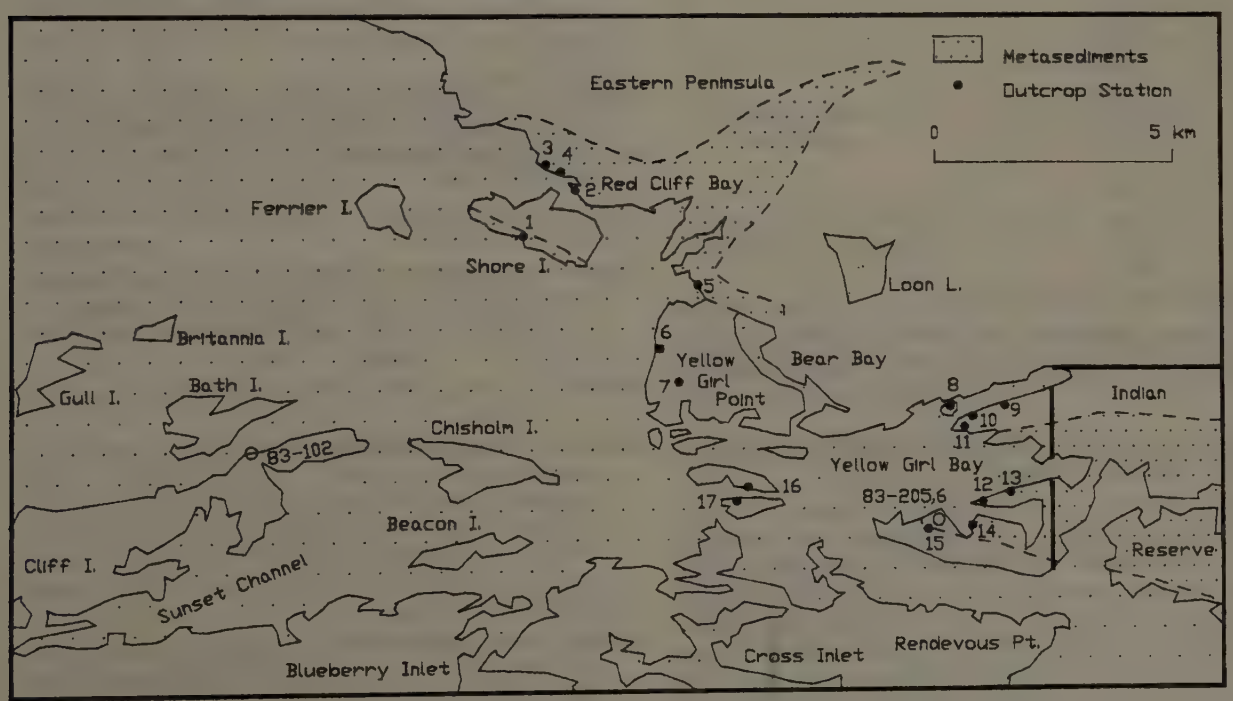
Geological Setting: The area is underlain by tightly folded clastic metasediments.

Previous Geological Work: The area was mapped by Lawson (1886), Lawson et al. (1897) and Fraser (1945). Lawson et al. (1897) mentioned slate in the area of Shore Island and Yellow Girl Point:

"On some small islands off the south-west side of Shore Island, a very fair quality of blue-black clay-slate, suitable for roofing purposes, occurs. The same argillitic rock occurs elsewhere on the shores to the north of the outcrop of granite on Yellow Girl Point, but the slaty cleavage has not been sufficiently developed in it to render it serviceable."

Geology: The rocks exposed are dark grey argillite, slate and wacke. They show graded bedding facing in directions corresponding to the fold axes of Blackburn et al. (1981). The units vary in thickness from less than 1 m to more than 20 m. Beds vary in thickness from 10 m to 5 m. The units showing graded bedding fine from a coarse sand base to a mudstone top (true slate). The proportion of true slate varies from 10 to 50% in most of the units with some (in the vicinity of 83-202, 203, 204) being entirely composed of slate. The thickest continuous exposure is about 200 m. The true slates show a well developed axial plane cleavage as a result of the tight folding. The slate splits into thin sheets but the intervening wacke and metavolcanics do not split as well in this part of the area.

To the west of Yellow Girl Bay, metasediments and metavolcanics are exposed in the many islands in Lake of the Woods. Samples obtained from the islands in Deadbroke Channel are fissile felsic metavolcanics that split into thin sheets. There are a few narrow chlorite shear zones present. Quartz veins cutting the slate are rare. Rusty weathering due to sulphide mineralization is present but is restricted to the metavolcanics and the immediate vicinity of the quartz veins. The rocks of this area have been subjected to tight folding, and deformation due to emplacement of several granitoid bodies and the Pipestone-Cameron Fault. Deformation has produced a strong foliation subparallel to the fault zone resulting in flagstone-type rocks wherever the lithology was suitable and the deformation intense enough. Axial plane cleavage is particularly pronounced in the fine-grained metasediments. The surface of the slate varies in hardness from easily scratched with a fingernail to a hardness of about 3 on the Moh's scale. This is surface material only, that has been somewhat affected by weathering. Several samples were



***Location Map F7** — Yellow Girl Bay - Shore Island.*

TABLE 4.3. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM YELLOW GIRL BAY DEPOSIT (F7).

	83-195	83-198	83-200	83-201	83-202	83-203	83-204	83-207
Talc			A			-		D
Chlorite	B	C	A	B	AB	-	AB	B
Amphibole	-	B	-	-	-	-	-	-
Mica	C	BC	-	C	C	A	C	D
Quartz	A	A	-	A	A	C	A	A
Dolomite			A			B		-
Calcite	-	BC	C	-	-	-	-	C
Plagioclase	B	BC	-	B	C	A	BC	A
K-Feldspar	B	-		-	-		-	

Note:
A major, B moderate, C minor, D very minor. (+ more, − less).
− not detected, ? uncertain identification.

submitted for X-ray diffraction mineral analysis. The results are given in Table 4.3.

With the exception of the shear zone material and the flagstone sample from the metavolcanics exposed in the islands just west of Yellow Girl Bay, talc is not an identified constituent of the rocks. The major minerals in all but 83-203 and 83-200 are quartz and feldspar with lesser amounts of mica. Only one (83-198) contained amphibole; this rock was identified in the field as mafic metavolcanics. The slate samples are all similar in mineralogy (quartz, feldspar, mica, chlorite). The presence of chlorite and mica results in a soft slate. A sample from a large quartz vein cutting the slate was analysed for trace elements. The results were:

Sample 83-206

Ag	<2
Au	3 ppb
Ba	130
Co	13
Cr	231
Cu	27
Li	26
Ni	30
Pb	13
Zn	102

All values are in ppm except Au.

Outcrop descriptions are given in Table 4.4. The locations of the outcrops are shown on the location map.

TABLE 4.4. DESCRIPTIONS OF OUTCROP STATIONS, YELLOW GIRL BAY AREA.

Samples 83-195, 196. Layered assemblage of reworked felsic ash tuff and slate; dark grey in colour; bedding 100°/90°; units 0.6 to 3 m thick.

Station 1. Slate intercalated with greywacke; graded bedding trends 125° to 135° and fines to the northeast; beds 10 to 60 m in thickness. Slate makes up 25 to 50% of outcrop.

Station 2. Poorly exposed outcrop of slate and greywacke. Cleavage trends 125°; rock contains a trace of pyrite.

Station 3. Intercalated grey slate and greywacke; cleavage is parallel to bedding; both trend 125°/80°E. Slate units are about 1 m thick and make up 10% of the exposed rock.

Station 4. Rock is greywacke-type metasediments with occasional beds of matrix-supported lapilli tuff and agglomerate; foliation 125°/85°W.

Station 5. Rock appears to be reworked tuff and sediment in a slaty matrix; cleavage is poor; bedding trends 125°; outcrop is cut by many fine quartz veinlets.

Station 6. Fine grained pink granite; sheets 15 m thick; joints 060°, 140°, 170°, all at less than 1 m spacing.

Station 7. Massive fine-grained pink granite with close spaced joints trending 020°/75°E, 050°/90° and 135°/90°; sheeting is 15 to 60 m. Sample 83-197.

Station 8 (Sample 83-198). Flagstone (metavolcanic); foliation trends 085°/90°; dark grey in colour; has carbonate in foliation and has veinlets; splits well.

Station 9. Metavolcanics similar to station 8 but rock does not split well.

Station 10 (Sample 83-199). Black slate; cleavage trends 090°/90°; unit is 15 m thick; bedding is not visible; fractures perpendicular to cleavage are spaced 1 m apart.

Station 11. Soft black slate; weathers rusty; unit is 10 m thick.

Station 12 (Sample 83-200). Intercalated slate and greywacke with minor metavolcanic units; metavolcanics are dark green chlorite schist cut by quartz veins; 60 m wide shear zone in the chlorite schist trends 085-090°/90-80°S; this material is very soft and talcose-feeling. Sample 83-200 from shear zone.

Station 13 (Sample 83-201). Slate intercalated with greywacke; bedding trends 105°; cleavage trends 090°; both are vertical. Slate makes up 15% of the rock; greywacke does not split. Sample 83-201 from slate.

Station 14. Dark grey slate (Sample 83-204) and dark green slate (Sample 83-202), separated by a 1 m wide chlorite schist unit with quartz carbonate veins; cleavage trends 090°. Sample 83-203 from chlorite schist.

Sample 83-205. Quartz vein cutting dark grey greywacke.

Sample 83-206. Rusty weathering dark grey metasediment is associated with chloritic schist as at station 14; rusty weathering zone is 3 m wide.

Station 15. Metasediments intercalated with felsic lapilli tuff; part of the metasediment is slate; most is greywacke.

Station 16 (Sample 83-207). Dark green chloritic felsic metavolcanics; well developed foliation trending 110°/90°; fissile.

Station 17. Mafic to intermediate metavolcanics; dark green; well developed foliation trending 095°/90°; fissile; cut by quartz veins.

Samples

83-102 Flagstone, Deadbroke Channel.
83-195 Slate.
83-196 Slate-wacke contact.
83-198 Flagstone.
83-199 Slate.
83-200 Talcose shear zone in slate.
83-201 Slate.
83-202 Dark green slate.
83-203 Chlorite schist.
83-204 Dark grey slate.
83-205 Quartz vein.
83-206 Rusty weathering metasediments adjacent to vein.
83-207 Flagstone.

History: There is no record or evidence of stone quarrying in this area although material may have been used for local summer resort construction. Gold and base metal exploration has taken place several times over the last 100 years.

References

NTS Map 52E/8, 52E/9
Blackburn et al. (1981)
Fraser (1945)
Lawson et al. (1897)

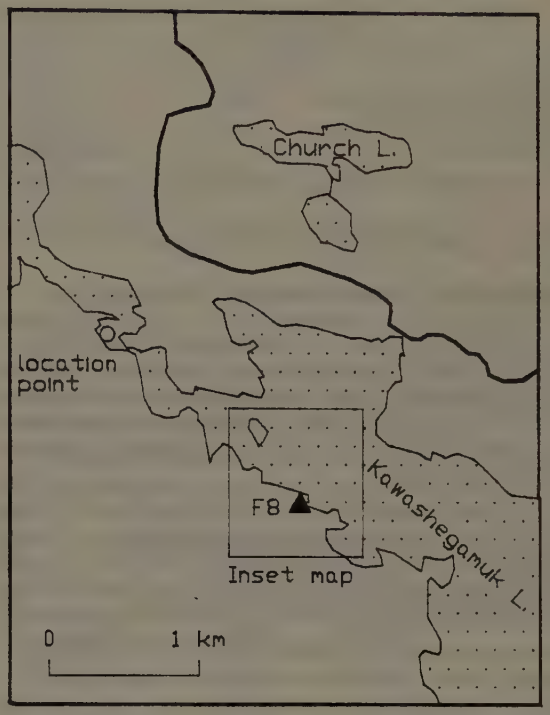
F8 KAWASHEGAMUK LAKE MARIPOSITE

Commodity: Mariposite

Status: Occurrence

Location: Kawashegamuk Lake, District of Kenora. Sample location 83-131 was used as a location point.

NTS: 52F/8NW
Latitude: 49°27′18″ Longitude: 92°23′08″
UTM: 544500 m E, 5479800 m N, Zone 15.



***Location Map F8** — Kawashegamuk Lake Mariposite.*

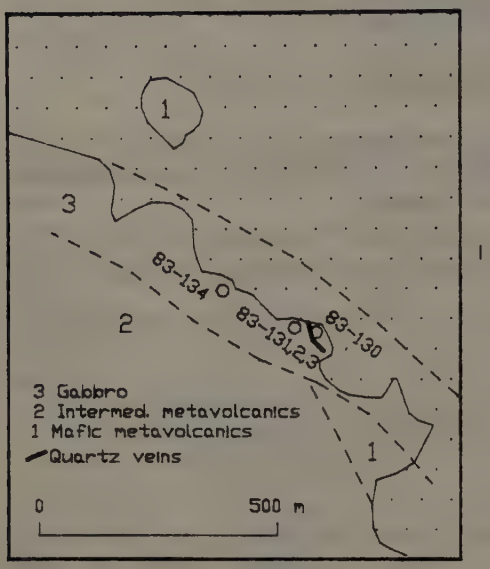
Access: The deposit can be reached from Kawashegamuk Lake.

DESCRIPTION

Geological Setting: The area is underlain by a varied assemblage of metavolcanics and metasediments, intruded by gabbro.

Previous Geological Work: The area was mapped by Kresz et al. (1982a) and Thomson (1934).

Geology: The deposit is a quartz-carbonate vein cutting metagabbro on the west shore of Kawashegamuk Lake. The gabbro on either side of the vein is foliated 130°/70°W and shows a pervasive carbonatization. The foliation and carbonatization intensify close to the vein. The vein and associated highly carbonatized gabbro are about 20 to 25 m wide and show little or no foliation. The carbonatized rock has developed a rusty weathering rind. Rusty weathering is extensive in the vein zone.



***Inset Map F8** — Kawashegamuk Lake Mariposite.*

Mariposite makes up only a small percentage of the vein, it is associated with disseminated euhedral pyrite grains up to 6 mm wide. Three samples of these rocks were submitted for X-ray diffraction mineral analysis (Table 4.5).

TABLE 4.5. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM KAWASHEGAMUK LAKE DEPOSIT (F8).

	83-131	83-133	83-134
Chlorite	C	-	A
Mica	C	C	-
Amphibole	-	-	-
Quartz	A	B	A
Plagioclase	-	A	B
Calcite	-	-	AB
Dolomite	A	A	-
Magnesite	A	-	?C
Serpentine	-	?C	-
Ag		<2 ppm	
Au		60 ppb	

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

Samples

83-131 Carbonatized metagabbro within the vein zone.
83-132 Mariposite-bearing rock.
83-133 Pyritic mariposite.
83-134 Slightly carbonatized metagabbro.

History: There is no record of extraction of mariposite from this deposit or of mineral exploration in the immediate area.

References

NTS Maps 52F/8
Kresz et al. (1982a)
Thomson (1934)

5. Marble

The commercial term marble includes carbonate rocks of various types and serpentinites that take a high polish; for the purpose of this study the term has been expanded to include carbonatized metavolcanics. The rocks examined as marble include: carbonate metasediments, quartz carbonate veins, serpentinites and carbonatized metavolcanics. The latter while not true marbles are included here because they could be used for some of the applications of marble. Table 5.1 lists the 'marble' deposits examined.

TABLE 5.1. MARBLE DEPOSITS IN NW ONTARIO.

M1	Gaherty Island Carbonate
M2	Hahn Lake (Patricia Lime Company)
M3	Kawashegamuk Lake Area
M4	Suffron Lake Area
M5	Woman Lake Narrows

Major units of carbonate metasediments are found in the Red Lake and Confederation Lake areas. These rocks contain variable amounts of carbonate minerals with accessory quartz, chlorite, mica, amphibole and in some cases traces of sulphide minerals. Intercalated units of siliceous material and clastic metasediments are evidence of a sedimentary origin for the carbonate units. The major carbonate units at Red Lake and Confederation Lake were deposited as stromatolitic limestone (Wallace 1980, Thurston 1982). The origin of some of the other carbonate metasediments is undetermined. Metamorphism of carbonate sedimentary rocks produces crystalline limestone by recrystallization of the carbonate minerals. Under increasing degree of metamorphism the grain size of the carbonate minerals increases and reactions between the various components of an impure limestone take place as described by Winkler (1979). The final product is a calc-silicate gneiss. Carbonate rocks of sedimentary origin (deposits M2 and M5) have been classified by the system of Storey and Vos (1981).

Quartz carbonate veins of hydrothermal origin are commonly associated with gold occurrences. They tend to be small and variable in composition particularly with respect to quartz content. The carbonate can be calcite, dolomite, ankerite or any mixture thereof. The carbonate veins may show several generations of vein material including both carbonate minerals and quartz. The veins frequently weather to a rusty brown colour due to decomposition of the ankerite. Two deposits were of this kind, M1 and M3 were identified and examined. They contain predominantly carbonate but quartz is present in all of them.

The carbonate rocks, whether metasediments or vein deposits are variable in colour and texture but are generally light coloured (white, grey, buff, etc.). The carbonate metasediments show the convoluted layering frequently found in commercial marbles. Several occurrences were mentioned by Lawson (1886) and Goudge (1938). Only one, the Hahn Lake deposit (M2), a metasediment, has been developed commercially. It was quarried briefly during the late 1930s to provide lime for the Red Lake gold mines. No other production from carbonate rocks has taken place.

Verde Antique 'marble', a premium quality building stone quarried in Vermont and Italy, consists of serpentinized ultramafic intrusive rock. A sample of the Verde Antique from Rochester, Vermont, was submitted for X-ray diffraction mineral analysis with the following results:

Serpentine	A
Chlorite	-
Talc	?C
Dolomite	AB
Magnesite	AB
Amphibole	-

Note: A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

In thin section the rock is a felted mass of serpentine and other minerals with abundant fine opaque grains (magnetite). The serpentine forms needle like crystals up to 1 mm long. The original mineralogy and texture of the rock have been completely obscured by the serpentinization process.

Several ultramafic rock bodies were examined and sampled and one (M4) was examined in more detail. No rocks similar to the Verde Antique were found in the study area. The rocks studied do not polish as well and some are not resistant to weathering. The textures of the serpentinites sampled are not the same as the Vermont Verde Antique but may be acceptable for some purposes.

Pervasively carbonatized metavolcanics are common in many parts of northwestern Ontario. A single area (M3) was studied as a typical example. The rocks are green with a well developed rusty brown weathered surface layer indicating they are unsuitable for exterior uses. In addition to pervasive carbonatization, many examples of brecciated metavolcanics with quartz-carbonate vein material filling the fractures can be found. These deposits are generally small but could be used in some ornamental applications. The metavolcanics usually do not polish to a high gloss even when highly carbonatized.

MARBLE RECONNAISSANCE

Several rock units that appeared to have some potential as 'marble' were examined and sampled. The carbonate metasedimentary units examined, other than at Red Lake and Woman Lake, are thin (a few metres only) with a low carbonate content. They have little potential as building or decorative stone due to their size and mineralogy. The results of X-ray diffraction mineral analyses are given in Table 5.2.

The ultramafic intrusive rocks sampled did not show the brilliant polish and carbonate veining of true Verde Antique. The rocks frequently had close spaced fracture and joint systems which would make quarrying difficult. The metavolcanics sampled polish to varying degrees but most do not develop a high

TABLE 5.2. X-RAY DIFFRACTION ANALYSES OF SAMPLES COLLECTED IN MARBLE RECONNAISSANCE OF NW ONTARIO.

Sample No.	83-35	83-36	83-74	83-75	83-172
Calcite	-	-	C	B	-
Dolomite					-
Quartz	A	-	A	A	-
Plagioclase	C	-	AB	A	B
Potassium Feld.	-	A	-	-	
Chlorite	C	-	B	AB	-
Mica	C	-	AB	C	-
Amphibole	A	AB	-	-	A
Pyroxene	C	B	-	-	
Epidote	BC	BC	-	-	
Sphene	C	C	-	-	

Note:
A major, B moderate, C minor, D very minor. (+ more, − less).
− not detected, ? uncertain identification.

Sample	Description
83-35	Calc-silicate gneiss.
83-36	Calc-silicate gneiss.
83-74	Siliceous carbonate metasediment.
83-75	Siliceous carbonate metasediment.
83-172	Amphibolite (altered ultramafic).
82-13*	Ultramafic intrusive rock (verde antique).
82-58*	Carbonatized metabasalt.
82-63*	Ultramafic intrusive rock.
82-150*	Metabasalt.
82-151*	Brecciated metabasalt with quartz vein.
82-199*	Dark grey metaconglomerate.
82-206*	Dark green metabasalt.
83-16*	Silicified metavolcanic breccia.
83-77*	Carbonate metasediment.

*Not analysed.

gloss. The samples examined are in shades of dark green to near black, frequently with quartz and carbonate vein materials filling fractures.

RECOMMENDATIONS FOR EXPLORATION

Based upon the field work done to date the potential for true marble (i.e. carbonate metasediments) appears to be restricted to the carbonate units exposed in the Woman Lake and Red Lake areas of the Uchi Subprovince. These are the only known units of sufficient width to quarry on a relatively large scale. Exploration should be restricted to these two areas unless new carbonate units appear during regional mapping.

Carbonate vein deposits tend to be small but polish to attractive samples. Carbonate veins are commonly associated with gold mineralization and contain variable amounts of quartz and sulphide minerals. Known gold occurrences and veins containing significant amounts of carbonate mentioned in the literature should be investigated for attractive material.

The potential for Verde Antique type rock (ultramafic intrusive rocks) appears to be limited. The samples polished do not develop a high gloss and many weather easily. Ultramafic rocks are exposed in small amounts in most parts of the area.

MARBLE DEPOSITS

M1 GAHERTY ISLAND CARBONATE

Commodity: Marble

Status: Occurrence

Location: North side of Gaherty Island, Lake of the Woods, District of Kenora.

NTS: 52E/9 NW

Latitude: 49°38′20″ Longitude: 94°29′16″

UTM: 392550 m E, 5499250 m N, Zone 15

Access: The deposit can be reached by boat from Kenora.

DESCRIPTION

Geological Setting: The deposit is a carbonate vein hosted in intermediate to felsic pyroclastic rocks.

Previous Geological Work: The area was mapped by Lawson (1886), Lawson et al. (1897) and Thomson (1937). The deposit was mentioned by Lawson (1886).

Geology: The deposit is a carbonate vein containing minor amounts of quartz and sulphide minerals. The vein trends 090°/90° and is at least 6 m wide. Strike length is obscured by overburden and the lake. The vein material weathers rusty brown but is light grey on the fresh surface. There are abundant chlorite seams some of which resemble mariposite but the colour may be due to weathering. There is a weak foliation parallel to that of the host rock due to the chlorite seams. Vertical joints spaced 1 m apart are perpendicular to the strike of the vein. The host rock is schistose altered tuff. Ghost-like lapilli sized fragments appear on the weathered surface. Quartz-carbonate veins appear in the foliation of the host rock in several places. The foliation surface is soft due to the presence of carbonate and chlorite.

A sample of the vein material was submitted for X-ray diffraction mineral analysis. The results were:

Dolomite	A
Quartz	B
Feldspar	C
Mica	C?

The carbonate material is probably predominantly ankerite. Quartz makes up about 2 to 5% of the rock (visual estimate). A second sample of the same material containing traces of pyrite was submitted for a 30 element spectrographic analysis and Au/Ag geochemical analysis; these results are as follows:

Manganese	T
Nickel	T
Titanium	T
Zinc	T
Iron	LM
Gold	180 ppb
Silver	<2 ppm

T 0.01 to 0.10% LM 0.5 to 5.0%

Samples

82-46

History: There is no record of any quarrying of this rock. The area has probably been explored for gold although there is no record of recent work.

References

NTS Map 52E/9
Lawson (1886)
Lawson et al. (1897)
Thomson (1937)

M2 HAHN LAKE
(W.S. Hall, Patricia Lime Company)

Commodity: Marble

Colour: White to light grey and buff

Status: Past producer

Location: Todd Township, District of Kenora. The lime kiln on the property was used as a location point.

NTS: 52M/1 SE

Latitude: 51°02′09″ Longitude: 94°08′42″

UTM: 419650 m E, 5654150 m N, Zone 15.

Access: The area can be reached by boat from Red Lake.

DESCRIPTION

Geological Setting: The area is underlain by chemical metasediments.

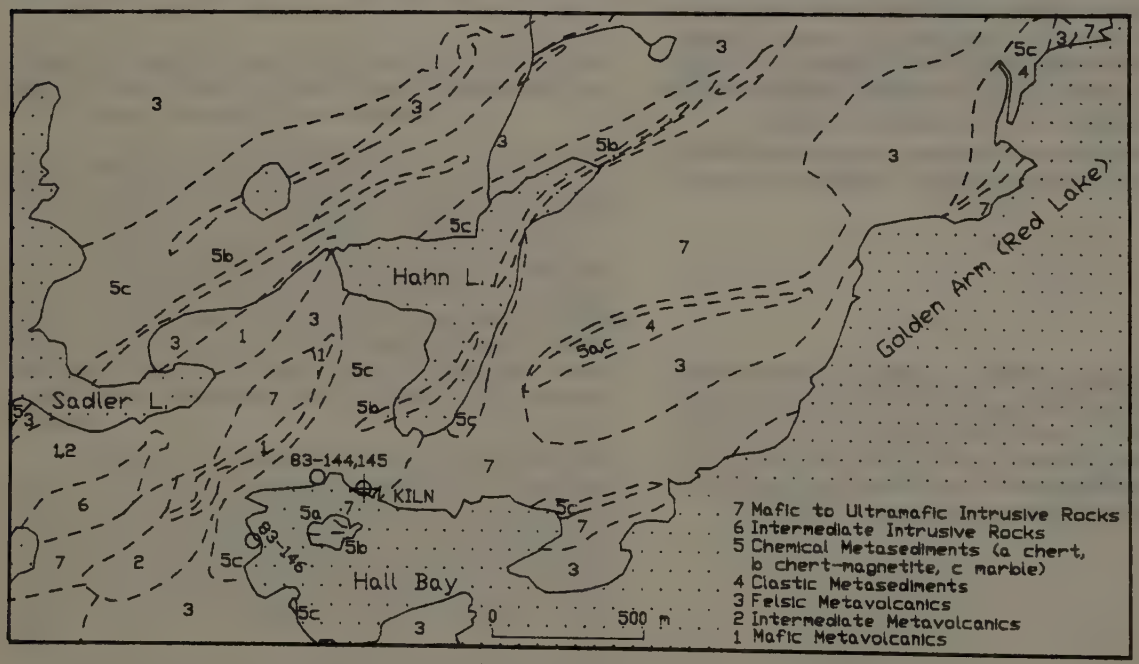
Previous Geological Work: The area was mapped by Dowling (1896), Bruce (1924), Hurst (1936), Horwood (1945) and Riley (1971, 1978). The deposit was described by Goudge (1938) and Horwood (1945). Goudge (1938) described it as follows:

"The deposit of high-calcium limestone owned by W. S. Hall is at the south end of Hahn Lake, in the township of Todd, just north of Red Lake. In 1936 a lime kiln was built on this property and will be in operation in 1937. The deposit is mostly covered by soil but according to Mr. Hall the deposit has been traced for several hundred feet. Samples of the limestone sent to the Bureau of Mines for examination consist of fine- to medium-grained, white to bluish grey, high-calcium limestone in which are a few small crystals of pyrite and some very thin veins of a soft, greenish, silicate mineral."

Geology: The deposit is in a north-northeast trending group of carbonate units (marble belt), extending from the west end of Hall Bay (Red Lake) across Hahn Lake and pinching out 500 m northeast of Hahn Lake. The marble belt is 550 m wide and 2.5 km long, it is intercalated with felsic metavolcanics (Riley 1978). The rock is poorly exposed except along shorelines. In outcrop convoluted layering roughly follows the alignment of the marble belt. In the available outcrops on Hall Bay, siliceous material is predominant, carbonate layers making up approximately 25% of the rock; however there is a bias toward siliceous units because of their greater resistance to weathering. Fresh carbonate rock is white to light grey in colour with dark grey siliceous layers.

Petrology: The rock polishes well, with little difference in polish between the light and dark layers. Siliceous blebs and streaks 1-8 mm long appear as dull spots on the polished surface that are not visible on the broken surface. The siliceous material and minor sulphide mineralization forms discontinuous layers parallel to the visible layering. The rock weathers readily to a pink to buff colour; on surfaces exposed to the action of surface water a rusty stain develops eventually (50 years). Four samples of this rock were submitted for X-ray diffraction mineral analysis (Table 5.3).

An acid insoluble residue was prepared and a X-ray diffraction (XRD) chart run for 83-142, 143, 144 and 146. In 83-142 sulphides were noted in the acid insolubles but not on the XRD chart.



***Location Map M2** — Hahn Lake (Patricia Lime Company). Geology after Riley (1978).*

TABLE 5.3. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM HAHN LAKE MARBLE DEPOSIT (M2).

	83-142	83-143	83-144	83-146
Chlorite	D	D	-	D
Mica	?D	D	?D	-
Amphibole	-	-	D	-
Quartz	C	C	A	BC
Calcite	A	A	A	A
Dolomite	D	-	-	-
Pyrite	?	D	?D	-
Pyrrhotite	?	D	-	-
Serpentine	-	-	-	-
Talc	-	-	?D	-

Note:
A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

Major and trace element geochemical analyses are given in Table 5.4. The rock is a high-calcium marble as indicated by the chemical analyses of these samples and several previously published analyses. Trace element analyses show no anomalous values and most are not above the detection limit.

Samples

83-142 Carbonate metasediments from dump beside kiln.
83-143 Carbonate metasediments from dump beside kiln.
83-144 Carbonate metasediments exposed on shore of Hall Bay.
83-145 Siliceous metasediments intercalated with the carbonate.
83-146 Rusty weathering carbonate metasediments with siliceous layers.

History: The deposit was initially staked by W.S. Hall during gold exploration in 1933, the claims were purchased by the National Extension Syndicate in 1934. Two of the claims were optioned by W.S. Hall in 1934. In 1935 and 1936, the carbonate was stripped, trenched and diamond drilled. In 1936, a steel draw kiln was built on Hall Bay. In 1938, the kiln was operated for test purposes and in 1939, it operated to produce lime for the Howey, McKenzie Red Lake and Cochenour Willans Mines. In February 1940, the Patricia Lime Company was formed to operate the deposit but no further production was recorded.

References

NTS Map 52M/1
Bruce (1924)
Bruce and Hawley (1928)
Dowling (1896)
Goudge (1938)
Horwood (1945)
Hurst (1936)
Riley (1971, 1978)

TABLE 5.4. CHEMICAL ANALYSES OF SAMPLES FROM HAHN LAKE MARBLE DEPOSIT (M2).

Sample No.	83-142	83-143	83-144	83-146	GH 1	GH 2	GH 3	GH 4	G 1	G 2	G 3	G 4	G 5
Major Elements													
SiO_2	0.99	1.35	54.8	8.58	0.37	1.30	0.78	4.47	7.12				
Al_2O_3	0.09	0.15	0.61	0.24	2.14	0.09	tr	tr	4.47*	22.0**	14.6**	27.8**	14.4**
Fe_2O_3	0.00	0.00	0.00	0.00	1.38	0.52	0.64	0.54					
FeO	0.55	0.48	0.21	0.82									
MgO	0.07	0.07	0.45	0.09	0.80	tr	0.44	0.02	17.27	13.44	16.31	11.80	15.32
CaO	54.0	53.5	24.4	49.7	53.24	55.15	53.77	52.70	28.47	27.38	27.77	25.98	27.77
Na_2O	0.18	0.15	0.00	0.12									
K_2O	0.00	0.02	0.00	0.00									
TiO_2	0.00	0.00	0.00	0.00									
P_2O_5	0.01	0.01	0.00	0.01									
MnO	0.40	0.48	0.16	0.43	nd	nd	0.81	1.45					
LOI	41.7	41.6	19.8	38.1									
Total	98.7	99.6	100.0	98.8	100.67	100.39	99.19	100.62	99.18	99.5	98.9	99.3	96.6
Trace Elements													
Ba	100	180	40	90									
Co	<5	<5	<5	<5									
Cr	<5	<5	<5	<5									
Cu	10	10	10	10									
Li	<3	<3	<3	<3									
Ni	<5	<5	<5	<5									
Pb	<10	<10	<10	<10									
Zn	12	12	10	14									

Major elements - All values in weight percent.
Trace elements - All values in ppm.
*Total Al_2O_3 + Fe_2O_3.
**Total SiO_2 + Al_2O_3 + Fe_2O_3.
GH samples from Hahn Lake deposit (Goudge 1938).
G samples from west shore of Golden Arm, Red Lake (Goudge 1938).
Mg and Ca were originally expressed as $MgCO_3$ and $CaCO_3$ by Goudge (1938). These were converted by the present author to equivalent MgO and CaO. The totals for GH and G samples are the totals for Goudge's original analytical data.

M3 KAWASHEGAMUK LAKE AREA

Commodity: Marble

Status: Occurrence(s)

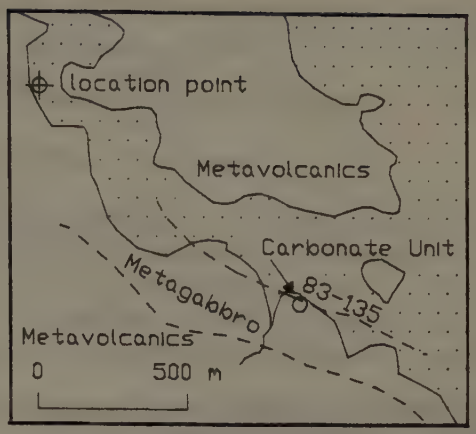
Location: Kawashegamuk Lake, District of Kenora. The narrows at the outlet of Kawashegamuk Lake was used as a location point.

NTS: 52F/8NW, 52F/9SW

Latitude: 49°28'50" Longitude: 92°24'16"

UTM: 543250 m E, 5480800 m N, Zone 15.

Access: The area can be reached by the Snake Bay forest access road that extends south from Highway 17 at a point 10.7 km southeast of Dinorwic.



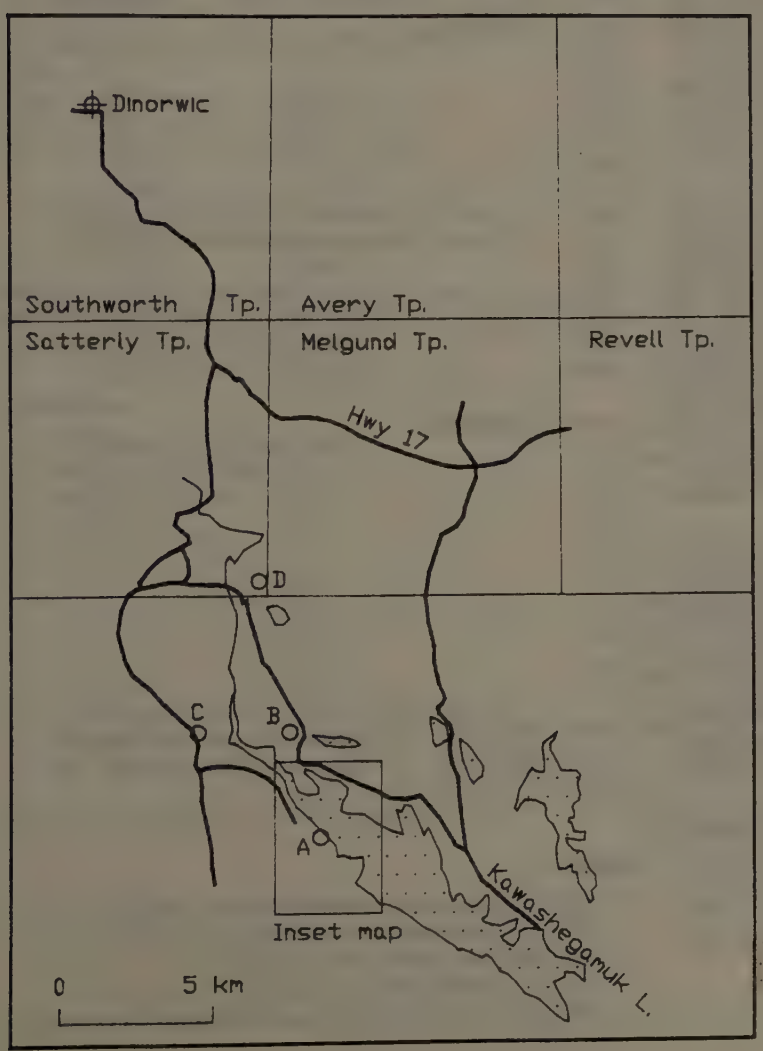
***Inset Map M3** — Kawashegamuk Lake Area.*

DESCRIPTION

Geological Setting: The area is underlain by a varied assemblage of metavolcanics and metasediments.

Previous Geological Work: The area was mapped by Kresz et al. (1982a) and Thomson (1934).

Geology: The area contains four rock types (see location map) of interest as 'marble'. These are: (A) carbonate metasediments at the north end of Kawashegamuk Lake; (B) carbonate veins northwest of Lee Lake; (C) carbonatized metabasalts along the



***Location Map M3** Kawashegamuk Lake Area.*

TABLE 5.5. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM KAWASHEGAMUK LAKE AREA (M3).

Sample No.	83-135	83-137	83-225	83-227	83-228	83-229	83-230
Chlorite	B	BC	-	-	-	B	BC
Mica	C	BC	?D	-	C	C	C
Amphibole	-	-	-	-	-	-	-
Quartz	A	AB	C	C	A	A	AB
Plagioclase	B	BC	-	-	A	-	-
Calcite	C	-	C	?D			
Dolomite	-	A	A	A	C	B	A
Magnesite	-	-					
Serpentine	-	-					

Note:
A major, B moderate, C minor, D very minor. (+ more, − less).
− not detected, ? uncertain identification.

forest access road; and (D) carbonatized felsic hypabyssal rocks at the Tabor Lake mine.

A. Carbonate metasediments are exposed in a narrow unit on the west shore of Kawashegamuk Lake near the outlet into the Kawashegamuk River. The rock is a narrow unit, very poorly exposed, between mafic metavolcanics and gabbroic intrusive rocks. The unit's width and strike length are not exposed; layering trending northwestward is present but is not clearly visible on the outcrop surface. A sample from a carbonate-rich layer was obtained and submitted for X-ray diffraction mineral analysis (Table 5.5).

B. A carbonate vein is exposed by a road cut and test pitting northwest of the west end of Lee Lake. The rocks exposed are felsic metavolcanics cut by a 12 m wide quartz-feldspar porphyry dike trending 310°. Both lithologies are cut by quartz-carbonate veins. All the rock exposures weather rusty. The metavolcanics are highly schistose at 100°/90°. On the south side of the dike, intense schistosity is associated with carbonate veins. Samples of the carbonate vein were submitted for major and trace element analyses (Table 5.6) and X-ray diffraction mineral analysis (Table 5.5).

C. A large area of pervasive carbonatization is shown by Kresz et al. (1982). Within this zone the rocks contain large amounts of carbonate minerals, particularly ankerite, and display a rusty weathering rind 1 to 2 cm thick. The rock is soft and dark green in colour on the fresh surface. Exposures are small due to its non-resistant nature. Samples were submitted for spectrometric analysis (Table 5.7) and X-ray diffraction mineral analysis (Table 5.5).

D. The Tabor Lake mine is a small gold deposit located on the north side of Tabor Lake. Rocks in this area are mafic metavolcanics intruded by carbonatized quartz porphyry. A sample of this material was submitted for X-ray diffraction analysis (Table 5.5).

TABLE 5.6. CHEMICAL ANALYSES OF SAMPLES FROM KAWASHEGAMUK LAKE AREA B (M3).

Sample No.	83-225	83-227
Major Elements		
SiO_2	5.17	2.99
Al_2O_3	1.13	0.27
Fe_2O_3	0.0	0.0
FeO	8.91	4.73
MgO	13.0	17.2
CaO	26.3	28.1
Na_2O	0.0	0.0
K_2O	0.09	0.03
TiO_2	0.02	0.0
P_2O_5	0.0	0.05
MnO	0.02	0.15
LOI	40.5	43.5
Total	98.58	99.26
Trace Elements		
Ba	70	70
Co	27	<5
Cr	<5	<5
Cu	6	6
Li	4	4
Ni	39	5
Pb	<10	<10
Zn	68	50
Ag	<2	<2
Au	<2	<2

Major elements - All values in weight percent.
Trace elements - All values in ppm except Au which is in ppb.

Samples

83-135 Carbonate metasediments. (Area A)
83-137 Carbonatized metabasalt. (Area C)
83-225 Carbonate vein. (Area B)
83-227 Carbonate vein. (Area B)
83-228 Carbonatized quartz-feldspar porphyry. (Area D)

TABLE 5.7. QUALITATIVE ICP-SPECTROMETRIC ANALYSIS OF SAMPLE FROM KAWASHEGAMUK LAKE AREA C (M3).

Element	Sample 83-137	Element	Sample 83-137
Aluminum	MH	Nickel	T
Arsenic	-	Niobium	-
Barium	-	Neodymium	T
Beryllium	-	Phosphorous	-
Calcium	MH	Silver	-
Cerium	T	Strontium	-
Chromium	T	Tantalum	-
Cobalt	-	Tin	-
Copper	T	Titanium	T
Iron	MH	Tungsten	-
Lanthanum	-	Vanadium	T
Lead	-	Yttrium	-
Magnesium	M	Zinc	T
Manganese	L	Zirconium	-
Molybdenum	-	Total Radio.	-

Note:
MH 5 to 15%; T 0.01 to 0.10%;
M 1 to 10%; L 0.1 to 1.0%

83-229 Carbonatized metabasalt. (Area C)
83-230 Carbonatized metabasalt. (Area C)

History: There has been no recorded stone quarrying in the area but gold exploration has taken place continuously since the 1890s.

References

NTS Maps 52F/8 and 52F/9
Kresz et al. (1982a)
Thomson (1934)

M4 SUFFRON LAKE AREA

Commodity: Marble

Colour: Dark green to black

Status: Occurrence

Location: Dome Township, District of Kenora. Sample 83-153 was taken as a location point.

NTS: 52N/4 SW
Latitude: 51°06′05″ Longitude: 93°47′18″
UTM: 444900 m E, 5661200 m N, Zone 15

Access: The deposit can be reached from Cochenour by the Abino mine road.

DESCRIPTION

Geological Setting: The area is underlain by mafic metavolcanics intruded by altered ultramafic rocks.

Previous Geological Work: The area was mapped by Ferguson (1961, 1966) and was included in reports by Dowling (1896), Bruce (1924), Bruce and Hawley (1928) and Horwood (1945). Ferguson (1966) described the rock as:

"Suffron Lake Hornblendite-Serpentinite. Two tongues of altered ultrabasic rock outcrop in the northern part of the township on the northwest and southeast sides of Suffron Lake. These dikes trend in a southwesterly direction, but the more southeasterly dike is rather irregular in strike. As shown on a previously published preliminary map (P.124) by [Ferguson], farther northeast in McDonough township, these dikes range in width from 350 feet to 1,200 feet. Many outcrops of these rocks are medium-grained and contain abundant amphibole, but in other places the rock is very soft and appears to be fine-grained and is strongly serpentinized. Some inclusions of country rocks are found within the dikes. On claim K.R.L.1640 of the Kaymac property, a few veinlets about 1/2 inch in width contain cross-fibre chrysotile asbestos."

Geology: Although most of the ultramafic body was mapped as hornblendite by Ferguson (1966), this particular outcrop was mapped as serpentinite. The outcrop examined is located in the southeast arm of the intrusion. The rock is fine-grained and very dark green in colour on its fresh surface. The outcrop is cut by minor white calcite veinlets. Joints oriented 040°, 146° and 170° spaced a metre or less apart are prevalent. There is a 2 to 4 mm rusty weathering rind on the surface. Fine-grained disseminated pyrite is present. Sample 83-153 was submitted for X-ray diffraction mineral analysis; the results were:

Chlorite	-
Mica	-
Amphibole	C
Quartz	-
Calcite	D
Dolomite	-
Pyrite	-
Pyrrhotite	-
Serpentine	A
Talc	-

Note: A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

The amphibole present appears to be of the calcium monoclinic variety, probably tremolite.

The rock polishes but not to a glassy finish. The surface is evenly polished and does not show plucking or erosion. The texture, not evident on the broken surface shows up well on the polished surface. The polished surface is almost black in colour.

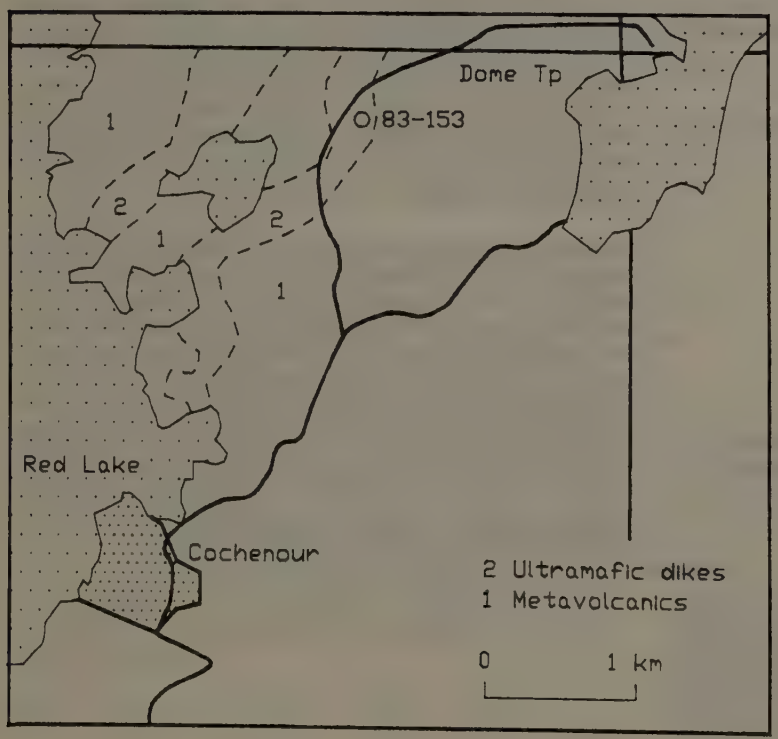
Samples

83-153

History: The exposure is on patented claim KRK 312 which was part of the Kaymac Gold Mines Ltd. property (charter cancelled in 1972). The area has been explored for gold but not dimension stone.

References

NTS Map 52N/4
Bruce (1924)
Bruce and Hawley (1928)
Dowling (1896)
Ferguson (1961, 1966)
Horwood (1945)
Hurst (1936)



***Location Map M4** Suffron Lake Area.*

M5 WOMAN LAKE NARROWS

Commodity: Marble

Colour: White

Status: Occurrence

Location: The deposit is located in west central Dent Township on the shore of Woman Lake 10 km north of the South Bay mine road. The deposit was not examined.

NTS: 52 N/2 NE

***Location Map M5** — Woman Lake Narrows.*

Access: The deposit can be reached from Woman Lake.

DESCRIPTION

This deposit was not examined. Bruce (1929, p.12) described the rock as follows.

"A band of rock, made up almost entirely of calcite, outcrops along the west side of the narrows in Woman Lake and crosses to the east side just north of post No. X of Sutcliffe's survey. The rock to the east of it is a dense, dark crystalline variety of the diorite-amphibolite type.... On the west side of the narrows the carbonate rock is light-grey with a few hard spots of dark siliceous material. On the east side near the contact with the amphibolite there is a zone of siliceous material interbanded with the carbonate and surrounding lenses of it. Away from the amphibolite the carbonate band resembles an ordinary limestone, but this zone near the igneous rock is similar to carbonate-silica zones formed by replacement, and it may be possible that the invasion of the amphibolite has produced a carbonate alteration in the volcanic series."

The rock exposed at Woman Lake Narrows is a stromatolitic limestone (Thurston 1982, Thurston and Jackson 1978). Pryslak (1970) showed a maximum thickness of 100 m on both sides of the narrows. The unit has a strike length of 1.6 km although part of this is under the waters of the lake. The carbonate occurs along the contact between mafic and felsic metavolcanics and was interpreted by Thurston and Jackson (1978) to overlay the felsic metavolcanics and mark a hiatus in volcanism before a subsequent volcanic cycle commenced with mafic volcanic rocks. A second siliceous carbonate unit, 90 m thick, is found on the shore of Narrow Lake in southeast Skinner Township.

References

NTS Map 52N/2
Bruce (1929)
Pryslak (1970)
Thurston (1982)
Thurston and Jackson (1978)

6. Soapstone

The definition of soapstone is imprecise but implies that talc is a major constituent of the rock. Two types of deposits have been examined: altered ultramafic intrusive rocks and altered mafic to ultramafic metavolcanics. The former are the most significant since they tend to have a higher talc content. Talc development in a rock as it is altered or metamorphosed was described by Winkler (1979). Narrow shear zones in mafic to ultramafic rocks often contain talc. Most of the soapstone deposits examined show a foliation which could have developed because the talc allowed easy deformation or because the deformation gave rise to the development of talc.

Altered ultramafic rocks can host both talc/soapstone deposits and asbestos deposits. The major talc/soapstone deposits in the Eastern Townships of Quebec (near Broughton and South Bolton) are found in the same type of ultramafic rock complexes as asbestos mineralization. Asbestiform minerals are present in a few soapstone locations (sample 82-43, 82-61, 82-147, 82-173, 82-187 and some of the deposits on the eastern part of Red Lake) but these are not common. X-ray diffraction performed on samples from known deposits and deposits deemed soapstone by this study showed no asbestos minerals in these samples.

Talcose alteration of ultramafic rocks is commonly associated with gold mineralization. Massive talc is found in a few of the deposits as at the Madsen mine near Red Lake but a mixture of talc, chlorite and carbonates is more common. The association of soapstone with gold mineralization led to the development, in 1922, of the H. H. Wood Talc Company deposit at Little Turtle Lake near Mine Centre, District of Rainy River. This deposit produced a small amount of soapstone for metal worker's crayons, gas burner tips and ornamental goods.

The metavolcanic type soapstone deposits (S2, S13) are lower in talc content and tend to be small occurrences. Numerous examples of these were mentioned by Lawson (1886) and Thomson (1937). Investigation of the Mica Point deposit (S13) indicated narrow lensoid bodies of soft rock which are very similar in appearance to the surrounding metavolcanics. The term pipestone is more applicable to these rocks than soapstone.

Soapstone was produced from the Eagle Lake deposit (S3) from 1925 to 1927, from the H.H. Wood deposit in 1922 and 1923 and on a trial basis from the Pipestone Peninsula deposit before 1920. The Trap Lake, Mile Lake and Wabigoon deposits were investigated during the 1920s but did not produce. Soapstone has traditionally been removed on a small scale from many deposits for carving pipes and ceremonial items by the Indian peoples. Currently local carvers obtain material from several of the deposits. The soapstone deposits examined are listed in Table 6.1. There has been no recent known systematic examination of soapstone deposits until the fall of 1983 when Wabigoon Resources Ltd. began a program to re-evaluate the Wabigoon deposit (S12) as a source of soapstone blocks and possibly talc for various industrial uses.

Soapstone is resistant to chemical and thermal decomposition, and has a high heat capacity. In the past this made it an attractive material for furnace linings in pulp mills, boiler settings and other refractory uses. The thermal properties of soapstone rather than its artistic potential led to exploration of the several deposits in the past. They were investigated as a source of refractory material during the 1920s. Many of the deposits proved unsatisfactory because the material cracked or crumbled due to variations in refractory properties.

TABLE 6.1. SOAPSTONE DEPOSITS OF NW ONTARIO.

S1	Claxton Township	occurrence
S2	Coste Island	prospect
S3	Eagle Lake Soapstone Quarry	past producer
S4	Labyrinth Bay	occurrence
S5	Little Turtle Lake (H. H. Wood Talc Co.)	past producer
S6*	Madsen	occurrence
S7	Mile Lake No. 1	prospect
S8	Mile Lake No. 2	occurrence
S9	Pipestone Lake	occurrence
S10	Pipestone Peninsula	past producer
S11	Trap Lake	prospect
S12	Wabigoon	prospect
S13	Mica Point	occurrence
S14	Phillips Township	occurrence
S15*	Pipestone Bay (Red Lake)	occurrence

*These deposits were not examined.

Modern uses of soapstone include carving material, novelty items, soapstone panels for use in woodstoves, laboratory tables and sinks and heat sinks for use in solar heating systems. The latter uses require refractory material but the temperatures involved are not as high as those developed in pulp mill furnaces and boiler settings and the local material could be satisfactory.

The highest quality soapstones are almost entirely composed of talc. The colour is blue-grey to grey-green and most are fine grained. The presence of large amounts of carbonate or chlorite is deleterious because carbonates are not resistant to heat, and since they are present in varying amounts throughout the rock the hardness of the rock is variable, making carving with simple tools more difficult. Chlorite tends to give the soapstone a foliation which makes carving difficult. In addition to true soapstone, the native people have reportedly carved any rock soft enough to be worked with the tools available at the time. These include altered metavolcanics (chloritic or sericitic schist) and soft metasediments.

SOAPSTONE RECONNAISSANCE

Table 6.2 lists the samples taken from various rock bodies that had a talcose feel when examined in the field or were indicated as talc occurrences in the literature. The locations for these samples are given in the appendix. These samples represent a variety

of lithologies; but all are characterized by softness and a talcose feel to the broken rock. The samples with a significant talc content (indicated by 'A' for talc in Table 6.2) were derived from mafic to ultramafic intrusive rocks with the exception of 83-200 which is a schistose mafic metavolcanic. The other soft rock types are chloritic or micaceous schists derived from mafic to intermediate metavolcanics and have only a low talc content. However several samples of altered ultramafic rocks did not contain measurable amounts of talc. The results indicate that mafic to ultramafic intrusive rocks are the most likely type of rock to contain significant talc.

TABLE 6.2. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES COLLECTED IN SOAPSTONE RECONNAISSANCE OF NW ONTARIO.

	82-60A	82-61	82-169	82-183	82-187	82-189	83-64	83-72	83-86	83-110	83-112	83-138
Talc	C	C+	D	-	BC	C-	-					
Amphibole	-	C+	-		-	C-	-	-	-	A	C	B
Chlorite	-	-	C	A	B	-	A	AB	A	-	A	B
Dolomite	-	A	-	-	-	-	-			-	-	-
Calcite	-	C+	C	B		-	B	B	B	-	-	-
Magnesite	-	-	-		-	-				-	-	-
Quartz	-	-	A	B		-	A	C	A	-	C	AB
Plagioclase	-	-	B	B		-	B	C	C	?D	-	A
Mica	-	-	C	-		-	D	A	C	A	C	C
Serpentine	A	C+	-		A	A				-	-	-

	83-147	83-148	83-149	83-151	83-172	83-173	83-200	83-203	83-208	83-218A	83-218B
Talc	-	A	?D	?D	-	-	A	-	-	A	A
Amphibole	?D	B	B	AB	A	A	-	-	B	-	C
Chlorite	-	B	-	-	-	B	A	-	A	AB	A
Dolomite	BC	-	-	BC	-	-	A	B	-	C	C
Calcite	-	-	-	A	-	A	C	-	D		
Magnesite											
Quartz	-	-	-	-	-	-	-	C	D	-	-
Plagioclase					B	-	-	A	-	-	-
Mica	-	-	-	-	-	-	-	A	-	-	-
Serpentine	A	-	A	B							

Note:
A major, B moderate, C minor, D very minor. (+ more, − less).
− not detected, ? uncertain identification.

Sample Descriptions

82-60A	Altered ultramafic intrusive.
82-61	Asbestiform material from above.
82-169	Schistose altered metavolcanic.
82-183	Altered mafic metavolcanics.
82-187	Ultramafic rock with asbestiform minerals.
82-189	Altered ultramafic.
83-64	1 m wide shear zone in gabbro.
83-65	Same as sample 83-64.
83-72	3 m wide shear zone in anorthosite.
83-86	Chlorite schist.
83-110	Soft shear zone in pyroxenite.
83-112	Soft vein in granodiorite.
83-138	Altered ultramafic rock.
83-139	Same as sample 83-138.
83-147	Asbestos occurrence in altered ultramafic rock.
83-148	Altered metagabbro/ultramafic.
83-149	Altered ultramafic.
83-151	Altered ultramafic.
83-172	Altered ultramafic.
83-173	Fibrous veins with calcite.
83-200	Chlorite schist (metavolcanic).
83-203	Chlorite schist (metavolcanic).
83-208	Schistose metagabbro.
83-218A	Schistose alteration zone at Pine Portage Gold deposit.
83-218B	Same as sample 83-218A.

SOAPSTONE DEPOSITS

S1 CLAXTON TOWNSHIP

Commodity: Soapstone/talc.

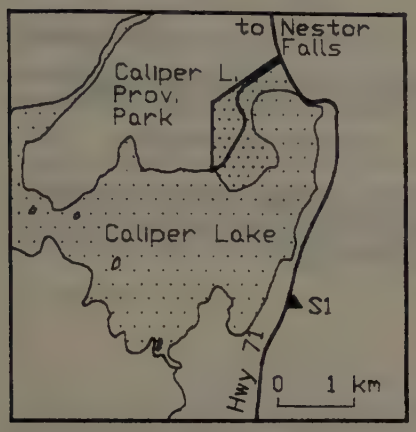
Status: Occurrence

Location: The deposit is exposed in a rock cut on Highway 71 in Claxton Township, District of Rainy River.

NTS: 52F/4SW

Latitude: 49°02'30" Longitude: 93°54'07"

UTM: 434050 m E, 5432200 m N, Zone 15.



***Location Map S1** — Claxton Township.*

Access: The talcose rock is exposed for 800 m on the east side of the highway.

DESCRIPTION

Geological Setting: The talcose rock is part of a large mafic inclusion in migmatitic granitoid rocks of the Sabaskong Batholith.

Previous Geological Work: The area has not been mapped but has been studied by Edwards (1982) and is illustrated on OGS Map 2443. The deposit is referenced in the Kenora Resident Geologist's Files (Ministry of Northern Development and Mines). The only published description is by Edwards (1982, p.95,101).

Geology: The talcose rock is found in rounded blobs 0.3 to 0.6 m long, often surrounded by a rim of chlorite-rich material 1 to 2 cm thick. The talc-bearing rocks show a wavy foliation trending northward and roughly vertical. The talc/soapstone is developed in amphibolitized peridotite (Edwards 1982). The material is exposed in varying amounts for 100 m along the highway. The surrounding rocks include agmatitic dikes of granitoid and more mafic intrusive rocks. The soapstone is light grey-green in colour and darker green in the more chloritic parts. Rusty brown weathering carbonate is irregularly distributed in it. The foliation is emphasized by chlorite. The softest material is found in an area a few metres wide. There is little exposure of rocks other than the amphibolite and granitoid rocks. Samples of the soapstone were submitted for X-ray diffraction mineral analysis (Table 6.3).

TABLE 6.3. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM THE CLAXTON TOWNSHIP SOAPSTONE DEPOSIT (S1).

Sample No.	82-129	83-60	83-61
Talc	A	-	A
Amphibole	-	A	D
Chlorite	AB	A	D
Calcite	BC	-	B
Quartz	B	-	C
Feldspar	C	-	-
Mica	C	D?	A

Note:
A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

The predominant minerals are talc and chlorite with lesser calcite and quartz and small amounts of feldspar and mica. The latter are likely due to metasomatism as a result of the close proximity of granitoid rocks.

Samples

82-129, 83-60, 83-61, 83-62

History: There has been no recorded production from this occurrence although it has likely been investigated by soapstone carvers and prospectors (Resident Geologist's Files, Ministry of Northern Development and Mines, Kenora).

References

NTS Map 52F/4
Blackburn et al. (1981)
Edwards (1982)

S2 COSTE ISLAND

Commodity: Soapstone

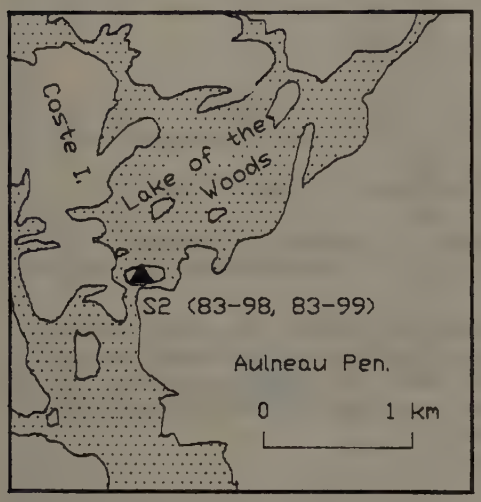
Status: Prospect

Location: The deposit is located between Coste Island and the Aulneau Peninsula, District of Kenora.

NTS: 52E/7NE

Latitude: 49°25′18″ Longitude: 94°42′05″

UTM: 376650 m E, 5475500 m N, Zone 15



***Location Map S2** — Coste Island.*

Access: The deposit is accessible by boat.

DESCRIPTION

Geological Setting: The area is underlain by mafic metavolcanics.

Previous Geological Work: The area was mapped by Lawson (1886) and Thomson (1936). The deposit was mentioned by Bell (1886), Lawson (1886), Spence (1940), Wilson (1926) and Vos et al. (1982). A brief description is on file in the Resident Geologists's office in Kenora (Ministry of Northern Development and Mines). The following description is from this report:

"Rock used as soapstone consists of a very talcose, altered mafic or ultramafic unit contained within fresher, amphibolitic basalt, possibly with some mafic tuffs. The talc-carbonate rock appears more mafic than the adjacent basalts. Vague questionable pillows were observed in several places but were not common. It is suggested that this unit represents altered ultramafic or high magnesium basalt flow."

Geology: The deposit is developed in pillowed and massive mafic metavolcanics trending east-northeast. The rocks are exposed on a small island separated from Coste Island by a marsh and on the west shore of the Aulneau Peninsula. The talc/soapstone unit is well exposed on the small island shown on the location map. The only workings consist of a small pit on the shore visible at low water. The soapstone unit trends 045° to 065° and is about 60 m in width. The material is soft and dark grey-green in colour. Much of it has a brecciated texture. Small veinlets of asbestiform minerals occur in a 0.3 m wide mafic dike that trends roughly parallel to the shore. Two samples of the talcose material were submitted for X-ray diffraction mineral analysis. The results were:

Sample	83-98	83-99
Chlorite	A	A
Talc	A	BC
Amphibole	BC	A
Dolomite	B	-

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

These results show a variation in the talc content of the material possibly indicating two or more distinct units in the talcose body.

Samples

83-98, 83-99

History: The deposit was quarried by Frank Thorgrimson of Keewatin in 1975; a small amount was used for decorative carvings. Material was obtained from this deposit by the Indians for ceremonial pipes.

References

NTS Map 52E/7
Bell (1886)
Lawson (1886)
Spence (1940)
Thomson (1937)
Vos et al. (1982)
Wilson (1926)
Resident Geologist's Files, Ministry of Northern Development and Mines, Kenora: 52/7NE B-1

S3 EAGLE LAKE SOAPSTONE QUARRY (Grace Mine)

Commodity: Soapstone

Status: Past producer

Location: Eagle Lake, District of Kenora.
NTS: 52F/11 NW
Latitude: 49°40′08″ Longitude: 93°19′14″
UTM: 476900 m E, 5501650 m N, Zone 15.

Access: The deposit is on Eagle Lake and is reached by boat.

DESCRIPTION

Geological Setting: The deposit occurs in a narrow septum of metavolcanics surrounded by granitoid rocks.

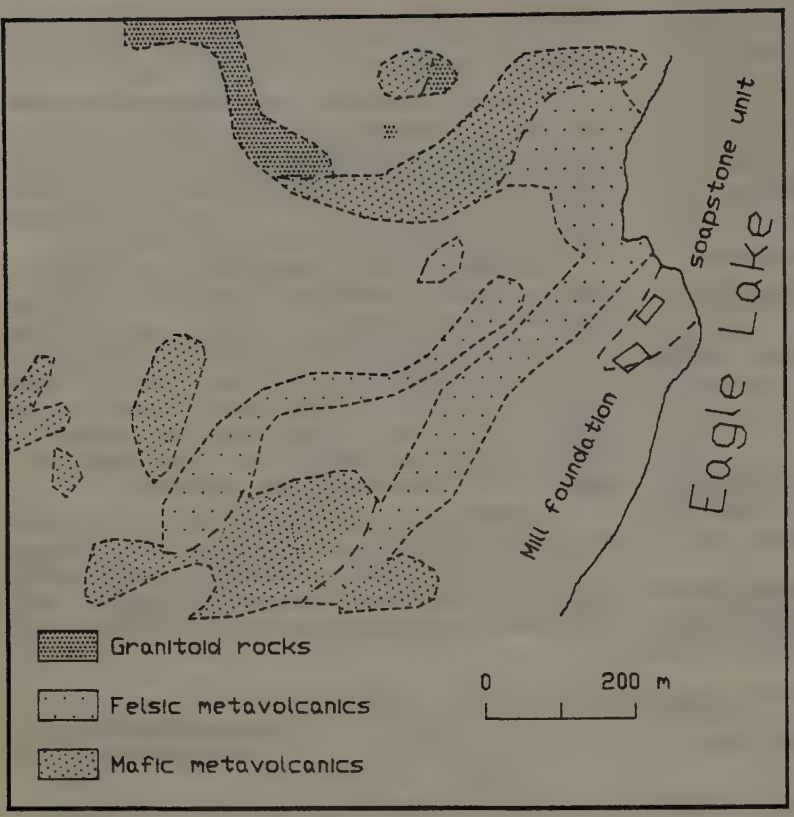
Previous Geological Work: The area was mapped by Moorhouse (1941). The deposit was described by Sutherland et al. (1925, 1926, 1927, 1928), Moorhouse (1941), Spence (1928, 1940), Hewitt (1972), Vos et al. (1982) and is mentioned by Sabina (1963). The description below is from Spence (1940):

"A band of soapstone, reported to be about 100 feet wide, occurs enclosed in talc-chlorite schist on the southwest shore of Eagle Lake. The location is 21 miles by water from either Eagle River or Vermilion Bay station on the main line of the Canadian Pacific Railway, to which water shipment can be made.

"In 1924, the Grace Mining Company commenced development of the deposit, erected a camp, and installed a large sawing plant. Work was continued for a few years, and several carloads of cut furnace stone were shipped to nearby pulp mills at Dryden and Fort Frances, Ont. The stone is stated to have proved satisfactory for such use, but possibly for lack of a sufficient market, work was discontinued about 1927-28 and has not been resumed.

"A small quarry was opened close to the edge of the lake, and the stone was cut out in 3-foot benches by means of a Sullivan channeller, working at right angles to the strike of the deposit. Quarry blocks were lifted by derrick and dropped onto small flat-

***Location Map S3** Eagle Lake Soapstone Quarry.*



***Inset Map S3** Eagle Lake Soapstone Quarry.*

cars, which ran directly to the sawing shed. This was a large, substantial building equipped with three 15-foot gang saws. Sand, obtained locally, was used to feed the saws.

"The output consisted entirely of furnace blocks and bricks, the former chiefly of 12 by 12 by 12 inches and 12 by 12 by 18 inches dimensions.

"The stone is light green in color, of medium grain, and inclined to schistose in structure. An analysis of a representative sample, made in the Bureau of Mines laboratory, showed:

Silica	43.20
Ferrous Oxide	7.95
Ferric Oxide	3.51
Alumina	6.74
Lime	1.30
Magnesia	27.64
Carbon Dioxide	1.95
Water above 105°C	7.80
	100.09

Geology: The soapstone is grey to grey-green in colour, fine grained and is cut by narrow (1 cm or less) carbonate veins. These veins weather rusty and are probably dolomite and ankerite. A thin (1-2 mm) layer of chlorite-rich material has formed along the vein contacts. There is a joint or fracture pattern in the soapstone well exposed on the lakeshore. The predominant direction is 185° with lesser directions 090° and 130°. These fractures are less than a metre apart in most cases. Fracturing did not appear in the quarry to any great extent. Samples of soapstone from the dump were submitted for X-ray diffraction mineral analysis. The results are as follows:

Sample	82-23	82-23A
Talc	A	A
Chlorite	B	AB
Dolomite	BC	B

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

These results are similar to those obtained by Moorhouse (1941) from thin sections.

The deposit is hosted in intermediate massive and fragmental metavolcanics. The soapstone is a lensoid (?) mass 30 m wide and up to 180 m long (Sutherland et al. 1925). The soapstone unit trends 055° and is vertical. The rocks on either side of the unit are metavolcanics; those on the north side are dark grey lapilli tuff, those on the south are chlorite schist with a well developed schistosity 055°/85°S to 90°. The fragmental rocks are either felsic in composition or have been silicified. The contacts between the soapstone body and the metavolcanics are obscured by overburden. A chemical analysis published by Spence (1940) indicates very little carbonate in the material analysed.

Samples

82-22, 82-23, 82-23A, 83-125, 83-126

History: The deposit was examined and several test blocks were quarried by the Grace Mining Company Limited in 1923. 174 tons of soapstone were produced in 1925 and 1926. Operations ceased in the spring of 1927. The soapstone was sawed into blocks for use as Kraft pulp mill furnace liners (Sutherland et al. 1925, 1926, 1927, 1928).

References

NTS Map 52F/11
Hewitt (1972)
Moorhouse (1941)
Sabina (1963)
Spence (1928, 1940)
Sutherland et al. (1925, 1926, 1927, 1928)

S4 LABYRINTH BAY

Commodity: Serpentine/soapstone

Status: Occurrence

Location: The occurrence is on the north side of an island in the northwest part of Labyrinth Bay, Shoal Lake, District of Kenora.

NTS: 52E/10SW

Latitude: 49°36′29′ Longitude: 94°49′52″

UTM: 367700 m E, 5496450 m N, Zone 15.

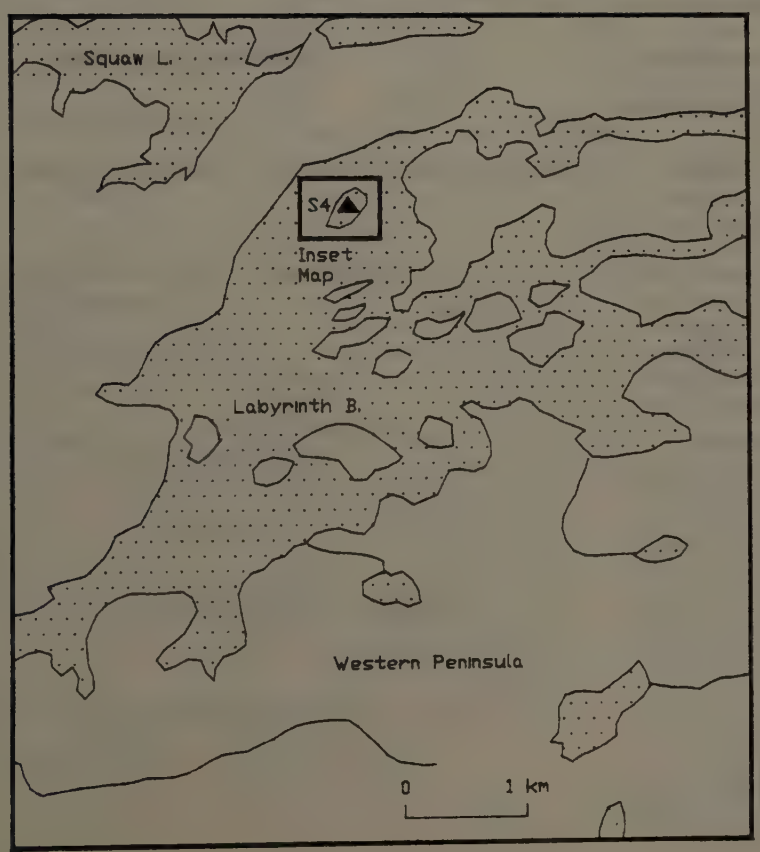
Access: The deposit is accessible by boat from Kenora.

DESCRIPTION

Geological Setting: The area is underlain by mafic to intermediate metavolcanics intruded by numerous small sills of altered peridotite.

Previous Geological Work: The area was mapped by Davies (1970b, 1978) and also by Lawson (1886) and Greer (1931) Davies (1978, p.32) described the altered peridotite as follows:

"The peridotite weathers dark brown and is greenish black on the weathered surface. It consisted of equidimensional olivine grains 0.1 to 1.0 mm across which were surrounded by pyroxene and primary amphibole. The olivine has been completely serpentinized and the pyroxene has been chloritized.



Location Map S4
Labyrinth Bay.

Magnetite, released during the alteration, is disseminated throughout the chloritized interstitial material and has also developed in some of the serpentinized olivine."

Geology: The ultramafic rock unit is a thin sill 75 m thick and of undetermined strike length trending 075°. The sill is hosted by mafic metavolcanic flows. The rock is dark green to black on the fresh surface and weathers brown. It is cut by numerous veins of white weathering asbestiform material. These veins are well developed near the north contact of the sill. The sill comprises a lower unit of serpentinized peridotite and an upper unit of massive gabbro. Mapping by Davies (1970b) indicated that there are several of these sills in the Labyrinth Bay area, many of which have ultramafic phases.

Three samples from this deposit were submitted for X-ray diffraction mineral analysis. The results were:

Sample	82-42	82-43	82-44
Talc	D	B	C
Serpentine		A	
Amphibole	BC	-	A
Chlorite	A	-	C

82-42 Altered ultramafic rock.
82-43 Dark green serpentinite.
82-44 White-weathering veins cutting serpentinite.
Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

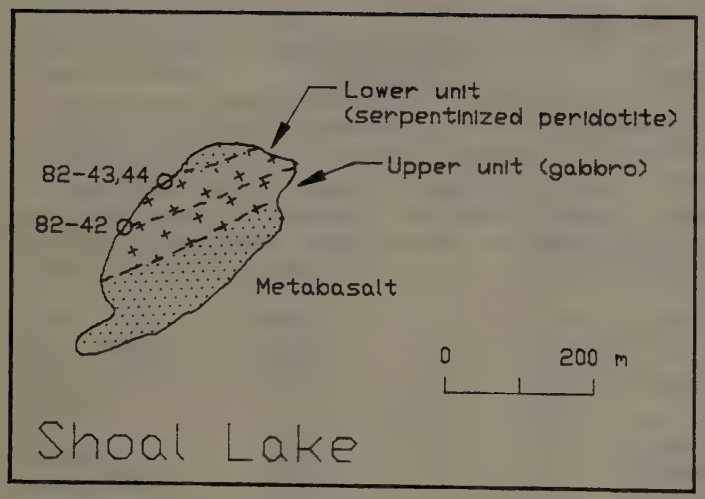
Samples

82-42, 82-43, 82-44, 82-45

History: The occurrence has been investigated recently as an asbestos deposit.

References

NTS Map 52E/10
Davies (1970b, 1978)
Greer (1931)
Lawson (1886)



***Inset Map S4** Labyrinth Bay.*

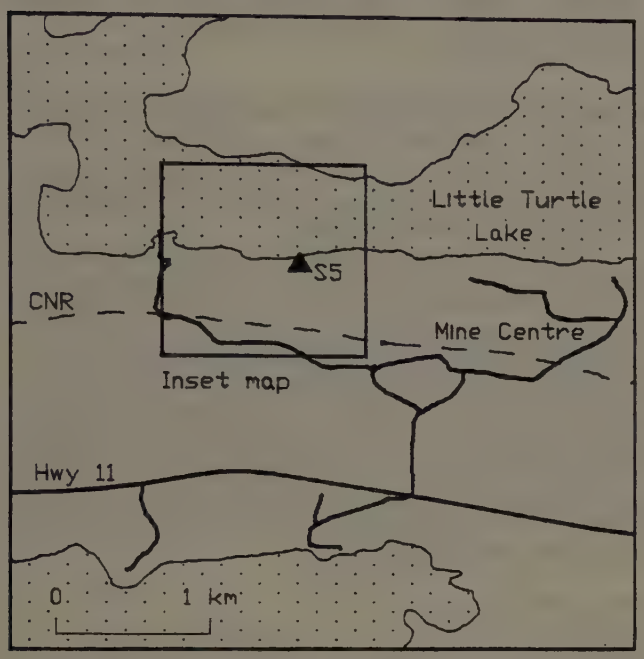
S5 LITTLE TURTLE LAKE QUARRY (H.H. Wood Talc Company)

Commodity: Soapstone

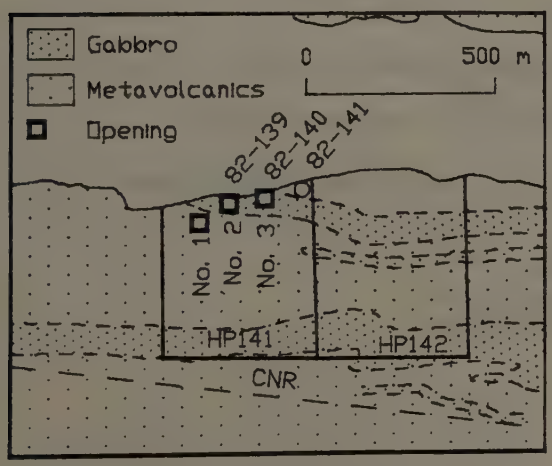
Status: Past producer

Location: South shore of Little Turtle Lake, approximately 1 km northwest of Mine Centre, Rainy River District.

NTS: 52C/15SE
Latitude: 48°46'28" Longitude: 92°38'02"
UTM: 527000 m E, 5402200 m N, Zone 15



***Location Map S5** — Little Turtle Lake (H.H. Wood Talc Co.).*



***Inset Map S5** — Little Turtle Lake.*

Access: The workings can be reached by boat from Little Turtle Lake or by walking through the bush from the CNR right of way.

DESCRIPTION

The area is underlain by intermediate metavolcanic flows and felsic pyroclastic rocks which have been intruded by thin gabbroic sills.

Previous Geological Work: The area was mapped by Wood et al. (1980), Tanton (1936) and Lawson (1913). The deposit has been described by Sutherland et al. (1923, 1925) and was mentioned by Eardley-Wilmot (1922). The description below is from Sutherland et al. (1923):

"The H.H. Wood Talc Company owns two 40-acre mining claims, H.P. 140 and H.P. 141 on the south shore of Turtle Lake, and about three-quarters of a mile northwest of Mine Centre Station on the Canadian National Railways. These claims were staked for gold during one of the early 'booms'.

"In June, 1922, the company began to work a soapstone deposit on H.P. 141. When inspected in August, a pit, 5 feet by 6 feet, had been sunk near the shore of the lake and was 12 feet deep. In addition to the soapstone obtained during the sinking of the pit, between two and three cubic yards had been channelled with a plugger drill from the deposit nearby. The portion of the soapstone deposit being worked was a band, two feet six inches wide, with a strike of 105 degrees magnetic.

"The soapstone is sawed at the property into steelworker's crayons, 1/2 inch to 3/8 inch by 4 and 5 inches. Power for the plugger drill and the saw is supplied by a 15 horsepower Clayton air compressor, driven by gasoline. Four men were employed under the supervision of H.H. Wood...."

Geology: The deposit is exposed in three small pits along the shore of Little Turtle Lake. The workings are overgrown and little can be seen of the geology. The third pit contains the most talcose material and was taken as the location point. The rocks exposed are dark green, well foliated, mafic to intermediate metavolcanics and dark grey, fine- to medium-grained gabbroic textured rocks. The metavolcanics show extensive development of chlorite and often split into thin slabs.

Openings 1 and 2 were sunk in metavolcanics. No. 1 is completely overgrown and little can be seen of the rock. Opening 2 is a pit 3 by 3 by 1 m deep on the lakeshore. The rock is layered with softer material forming thin layers parallel to the foliation. There is a trace of disseminated pyrite in the rock and minor seams of pyrite parallel to the foliation. The foliation in the metavolcanics trends 070°/85°N. Opening 3 is in gabbroic rock. The foliation is much weaker than in the metavolcanics and soft lensoid masses of talcose material are present. The weathered overgrown state of the workings obscures the details of these lenses. Narrow quartz veins are associated with the talcose rock in all of the workings. Often the softest material is intimately associated with the veins.

Three samples were submitted for X-ray diffraction mineral analysis (Table 6.4), two from the altered metavolcanics and one from the talcose material developed in the gabbro.

TABLE 6.4. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM THE LITTLE TURTLE LAKE SOAPSTONE DEPOSIT (S5).

	82-139	82-140	82-141
Quartz	B	B	?C
Plagioclase	B	B	C
Muscovite	-	-	-
Amphibole	A	C−	B
Chlorite	C+	A	A
Talc	?C	C−	-
Serpentine	-	-	-
Dolomite	-	?C−	?C−
Calcite	-	C	-
Magnesite	-	-	-

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

Talc is only a minor constituent of these rocks. The dominant material is chlorite and hornblende with plagioclase and quartz as the next most common minerals. None of these samples have a composition corresponding to the other soapstone deposits of the area. The original rocks were mafic to intermediate metavolcanics and metagabbro rather than ultramafic rocks.

Samples

82-139 Soft material from pit in metavolcanics.
82-140 Softest material available from pit in metagabbro.
82-141 Chloritic intermediate metavolcanic.

History: The deposit was discovered during gold exploration and was worked in 1922 and 1923. A total of 17 tons of soapstone was removed for the production of metalworker's crayons, gasburner tips and ornamental goods.

References

NTS Map 52C/15
Eardley-Wilmot (1922)
Sutherland et al. (1923, 1925)
Lawson (1913)
Tanton (1936)
Wood et al. (1980)

S6 MADSEN

Commodity: Talc/soapstone

Status: Occurrence

Location: Madsen gold mine, Baird Township, District of Kenora. The deposit was not examined.

NTS: 52K/13 NW

Access: The area is accessible by Highway 618.

DESCRIPTION

Geological Setting: The talcose rocks are developed in ultramafic intrusive rocks associated with the Madsen gold deposit.

Previous Geological Work: The deposit has been described by Ferguson (1965). The talcose rocks do not outcrop in many places. They are found mainly in the underground workings. The following description is taken from Ferguson (1965):

"An altered peridotite, called locally the South Austin 'footwall talc', is generally about 50 feet wide, but ranges from 30 to 200 feet. It cuts across the Austin tuff and divides the tuff into the South Austin and Main Austin sections. Farther northeast the same band of talc is at the base of the Austin tuff and then progresses stratigraphically lower across a basalt flow to the base of that flow. Microscopic work has indicated that this dike is altered peridotite."

A sample obtained from the Madsen dump was submitted for X-ray diffraction mineral analysis. The results are tabulated below:

Talc	A
Amphibole	D
Chlorite	AB
Dolomite	C
Calcite	-
Magnesite	-
Quartz	-
Feldspar	C?
Mica	-

Note: A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

History: The deposit was a gold producer from 1938 to 1976.

References

NTS Map 52K/13
Ferguson (1965)

S7 MILE LAKE NO. 1

Commodity: Soapstone

Status: Prospect

Location: Southeast shore of Mile Lake, District of Kenora.

NTS: 52F/10NW

Latitude: 49°40'36" Longitude: 92°46'18"

UTM: 516450 m E, 5503700 m N, Zone 15.

Access: The deposit can be reached by boat from Dryden.

DESCRIPTION

Geological Setting: The soapstone is developed in an altered gabbro.

Previous Geological Work: The area was mapped by Satterly (1943). The deposit was described by Wright (in Wilson 1926), Satterly (1943) and was mentioned by Hewitt (1972), Sabina (1963) and Vos et al. (1982). Satterly described the deposit as follows:

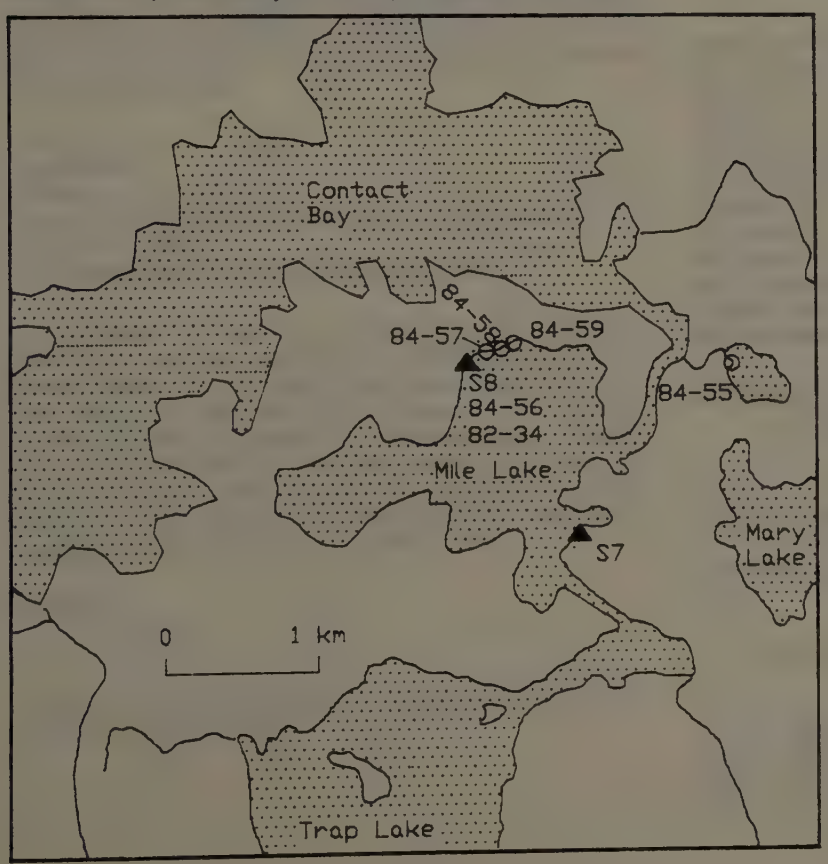
"[The deposit is] on the southeast shore of the lake, where the rock is an altered gabbro capped by clay in which there are a number of caved in trenches. One chain in from the shore is an outcrop of soapstone, which has been blasted, and blocks have been sawn, presumably for test purposes. The soapstone is medium grained and blotchy green and grey, and is probably a highly altered, ultrabasic lens in the gabbro."

Geology: There is very little exposure of this deposit. The only outcrop is about 10 m in diameter. The soapstone is dark grey and similar in appearance and texture to that of Trap Lake but does not appear to contain biotite. Joints 115°/80°S and 355°/90° are present. These are spaced 0.6 m and more; seven joints were noted in the outcrop. Gabbro outcrops can be found near this occurrence. No carbonate veins were noted in this deposit. Workings consist of a small test pit 0.5 m deep and several caved-in trenches in the overburden.

History: The deposit was examined circa 1924 by the Wabigoon Soapstone Company.

References

NTS Map 52F/10
Hewitt (1972)
Sabina (1963)
Satterly (1943)
Vos et al. (1982)
Wilson (1926)
Wright (1924)



Location Map S7 & S8
Mile Lake No. 1 & 2.

S8 MILE LAKE NO. 2

Commodity: Soapstone

Status: Occurrence

Location: Northwest shore of Mile Lake, District of Kenora.

NTS: 52F/10NW

Latitude: 49°41′27″ Longitude: 92°46′54″

UTM: 515700 m E, 5503700 m N, Zone 15.

Access: The deposit can be reached by boat from Dryden.

DESCRIPTION

Geological Setting: The soapstone is in an altered gabbroic intrusive body.

Previous Geological Work: The area was mapped by Satterly (1943). The deposit was briefly described by Wright (in Wilson 1926) and Satterly (1943) and was mentioned by Hewitt (1972), Sabina (1963) and Vos et al. (1982). Satterly described the deposit as follows:

"The ... occurrence is on the northwest shore of the lake near the west contact of the gabbro mass and is a greenish, coarse-grained rock with aggregates of biotite, probably metamorphic in origin. This rock does not appear to be of same type as that on the southeast shore."

Geology: The rock exposed in the area is a massive dark grey-green gabbro similar in texture and grain size to the rocks at Trap Lake and Mile Lake No. 1. The soapstone is developed near the contact between the gabbro and mafic metavolcanics and in several narrow zones along the north shore of Mile Lake. There are several small pits in the gabbro exposing minor sulphide mineralization. Talcose material is present in the rock of the occurrence but similar appearing rock in outcrops immediately to the east does not appear to contain talc. A shear zone in the metagabbro contained the most talcose material in the area.

Samples from the showing were submitted for X-ray diffraction mineral analysis (Table 6.5).

TABLE 6.5. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM THE MILE LAKE NO. 2 SOAPSTONE DEPOSIT (S8).

	82-34	84-55	84-56	84-57	84-58
Talc	A	B	B	A	A
Amphibole	D	B	C	C	C
Chlorite	A				
Dolomite	C				
Magnesite	D?				
Quartz	-	C	-	D	D
Mica	-	C	-	D	D
Serpentine		A	A	B	B

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

Samples

82-34 Soapstone from area indicated by Wright (in Wilson 1926).
84-55 Sample of talcose rock from a pit on a nickel occurrence near Mary Lake.
84-56 Same location as 82-34.
84-57 From a pit on the shore of Mile Lake.
84-58 From shear zone.

History: The deposit was discovered circa 1924 by the Wabigoon Soapstone Company; no further work was performed. Recent (1970) test pits were sunk during exploration for copper and nickel.

References

NTS Map 52F/10
Hewitt (1972)
Sabina (1963)
Satterly (1943)
Vos et al. (1982)
Wilson (1926)
Wright (1924)

S9 PIPESTONE LAKE SOUTH

Commodity: Soapstone

Status: Occurrence

Location: Sample 82-76 is taken as a location point on Ross Island, Pipestone Lake, District of Rainy River.

NTS: 52F/4SE

Latitude: 49°04′53″ Longitude: 93°33′23″

UTM: 459300 m E, 543600 m N, Zone 15.

Access: The deposit is accessible by boat from Pipestone Lake.

DESCRIPTION

Geological Setting: The area is underlain by mafic metavolcanics intruded by mafic to ultramafic sills.

Previous Geological Work: The area was mapped by Edwards (1981, 1983), Edwards and Lorsong (1976) and Thomson (1936).

Geology: The deposit was formed as an alteration zone in a peridotite sill. The rock called soapstone is a fine-grained rusty weathering zone about 3 m wide; the strike length is unknown due to overburden and water cover. The rock is foliated 080°/85°S. The original rock is a dark green to black, fine-grained peridotite. The contact with the soapstone is gradational over 1 m. Foliation in the peridotite is the same as that of the soapstone. Sample 82-76 was submitted for X-ray diffraction mineral analysis. The results are tabulated below:

Talc	D?
Amphibole	B
Chlorite	A

Note: A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

Although indicated by Edwards and Lorsong (1976), no fibrous asbestiform material was seen in the exposure. Similar rocks have been mapped along the strike of this unit by Edwards and Lorsong (1976). Several exposures of ultramafic rocks showing varying degrees of alteration occur in this part of Pipestone Lake. Jointing was not evident in this outcrop but other exposures show fractures often with talcose, serpentine-like material in them.

Samples

82-76, 82-77

History: There is no known soapstone production from this part of the lake.

References

NTS Map 52F/4
Edwards (1981, 1983)
Edwards and Lorsong (1976)
Thomson (1936)

S10 PIPESTONE PENINSULA

Commodity: Soapstone

Status: Past producer

Location: North shore of Pipestone Peninsula, Manross Township, District of Kenora.

NTS: 52E/9NW

Latitude: 49°37′27″ Longitude: 94°20′08″

UTM: 403400 m E, 5497500 m N, Zone 15.

Access: The deposit can be reached by boat.

DESCRIPTION

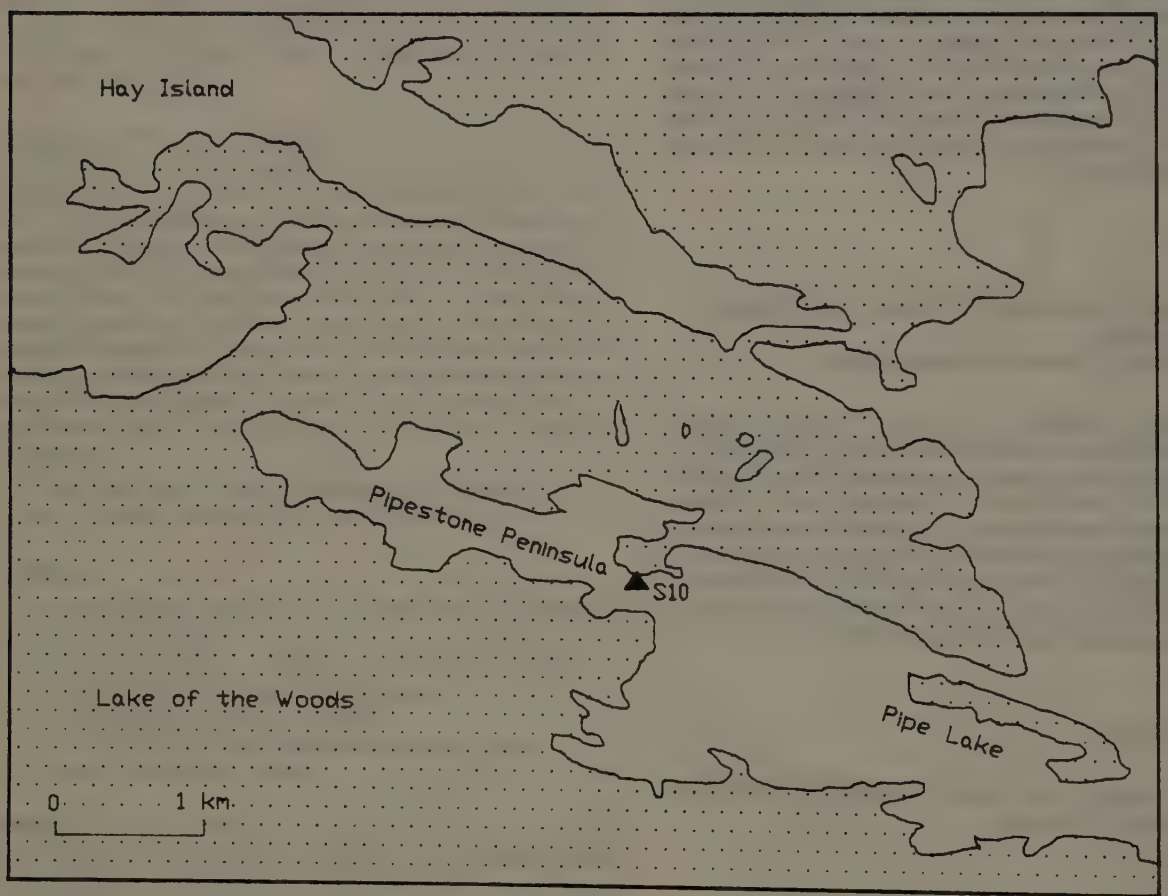
Geological Setting: The deposit is in a fine-grained mafic sill hosted by mafic metavolcanics.

Previous Geological Work: The area was mapped by Lawson (1886) and Suffel (1931). Davies (1967) mapped the area immediately south of the deposit. The deposit has been described by Wilson (1926) and Spence (1922, 1940) The following description is taken from Spence (1940):

"Initial work was done at this locality in 1915 by Messrs. Mather and Beveridge, and about twenty years ago, the Dryden Pulp and Paper Company, Dryden, Ont., took out some stone from a small quarry in the face of a low bluff fronting on Moore Bay, at the point where the short Pipestone portage crosses to Andrew Bay. Four carloads of stone were shipped by scow to Kenora, and sent to Dryden for trial as furnace stone, but the material was reported too seamy for the purpose and to be of inferior quality. The stone occurs as a band about 75 feet wide, enclosed in grey slate. It is not a true soapstone, but a soft, chloritic slate. It is rather harsh-textured, with a slaty cleavage, and yields a dirty grey powder having a little or no slip. An analysis, made in the Bureau of Mines laboratory, showed:

Silica	9.14
Ferrous Oxide	8.79
Ferric Oxide	3.48
Alumina	7.32
Lime	5.92
Magnesia	21.31
Carbon Dioxide	7.31
Water above 105°C	6.68
Total	99.95

Geology: The soapstone is exposed in two workings: one the quarry on the shore described by Spence and the other a small pit about 30 m south of the quarry. The soapstone unit is poorly exposed other than in these workings. The soapstone is devel-



***Location Map S10** — Pipestone Peninsula.*

oped in narrow (1 m) lenses in altered mafic rock. The mafic rocks are foliated varying from 095°/85-90°N in the quarry to 075°/90° - 065°/75°N in the pit. Both the soapstone in the quarry and the less altered rocks are cut by narrow dolomite-ankerite veins although these are not evident in the south pit. The talcose part of the mafic unit is approximately 30 m wide but the width probably varies along strike.

Mapping of the area a few hundred metres south of the workings by Davies (1967) indicated that Pipestone Peninsula is the north limb of a synformal fold. Talcose altered rock is reported to occur farther west near the end of Pipestone Peninsula (Lawson 1886)

Petrology: The soapstone is dark blue-grey to grey-green in colour with a brown tint on the more weathered surfaces. The rock has a distinct foliation emphasized by chlorite. It parts along the foliation to form an irregular surface. Two samples of talcose material from the two workings were submitted for X-ray diffraction mineral analysis; the results were:

Sample	82-164	82-167
Talc	A	A
Amphibole	-	-
Chlorite	A	AB
Dolomite	B	A

Note:
A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

Samples

82-164 to 82-167

History: Small-scale production of soapstone blocks for paper mill furnace linings took place prior to 1920. Small amounts of material have been removed for carving and mineral collections.

References

NTS Map 52E/9
Davies (1967)
Lawson (1886)
Spence (1922;1940)
Suffel (1931)

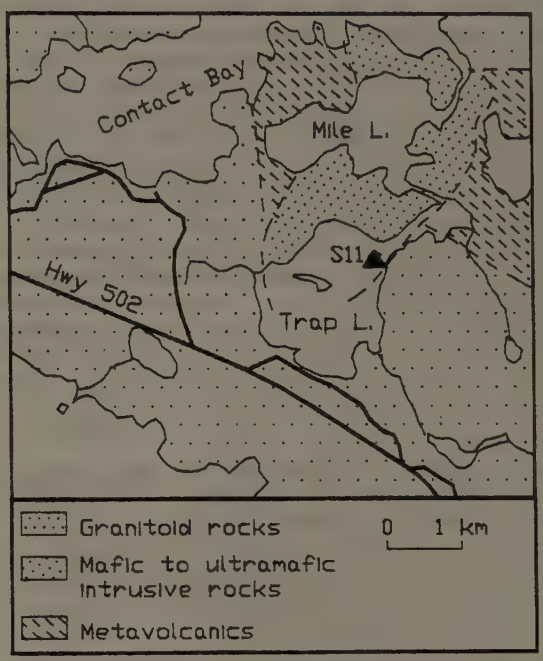
S11 TRAP LAKE

Commodity: Soapstone

Status: Prospect

Location: Islands 246 and 249 in Trap Lake, District of Kenora. The centre of island 246 was taken as a location point.

NTS: 52F/10NW
Latitude: 49°40'01" Longitude: 92°46'45"
UTM: 515850 m E, 5501350 m N, Zone 15.



***Location Map S11** — Trap Lake.*

Access: The deposit can be reached by boat from Dryden.

DESCRIPTION

Geological Setting: The soapstone is in an altered gabbro body.

Previous Geological Work: The area was mapped by Satterly (1943). The deposit was described by Satterly (1943), Spence (1922, 1940) and Wright (1924; in Wilson 1926) and has been mentioned by Sabina (1963), Hewitt (1972) and Vos et al. (1982). Satterly (1943, p.54) described the deposit as follows:

"The soapstone is fairly massive but has widely spaced fractures, is medium grained and grey and green in colour, the two colours representing pseudomorphs after two minerals. In thin section under the microscope the aggregate consists of talc, carbonate, and antigorite, with a minor amount of penninite and iron ores. The original two minerals were probably olivine and a pyroxene. The olivine is represented by an aggregate of talc, carbonate, with

grains of iron ore, and some antigorite. The pyroxene pseudomorph shows strips of antigorite at right angles to each other, presumably paralleling two sets of cleavages, with a talc aggregate between these strips. The original rock was, therefore, a variety of peridotite; as harzburgite occurs on a nearby island, the rock was most likely that species. On island no. 249, the soapstone is fairly massive, medium-grained , and greyish green in colour. The reef just southwest of the island is also a medium grained soapstone composed of a green mineral in a chocolate brown ground mass. These occurrences are believed to be altered harzburgites."

Geology: Soapstone makes up the entire area of islands 246 and 249. The rock is dark grey in colour on both weathered and fresh surfaces. The rock is massive and medium grained (2-4 mm), but is cut by dolomite-ankerite-tremolite veins, 0.5 to 1 cm wide and trending approximately 190°. These are particularly evident on the south side of island 246. Joints are 1 to 2 m apart. Similar jointing has developed in the gabbro. Subhorizontal to west-dipping sheeting 0.5 to 1 m in thickness is evident in both the soapstone and the gabbro.

The actual relationship between the soapstone and the gabbro is obscured by Trap Lake. Both rock types have similar textures. Satterly ascribed the soapstone to hydrothermal alteration of harzburgite (peridotite).

Three samples of soapstone and one sample (82-28) of a vein cutting the soapstone were submitted for X-ray diffraction mineral analysis (Table 6.6). These indicate a high talc content in all parts of the body along with a high chlorite and a lesser dolomite content. This corresponds well with thin section determinations by Satterly (1943).

TABLE 6.6. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM THE TRAP LAKE SOAPSTONE DEPOSIT (S11).

	82-27	82-28	82-29	82-30
Talc	A	A	A	A
Amphibole	D	C?	-	C
Chlorite	B	A	A	AB
Dolomite	C	B	BC	B
Magnesite	C?	C?	C?	C?

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

Samples

82-27, 82-28, 82-29, 82-30

History: The deposit was discovered in 1923 by E.G. Pidgeon of Wabigoon; Thermo-Stone Quarries Ltd. was formed the same year to develop the property. Work was restricted to stripping and test pitting in 1923.

References

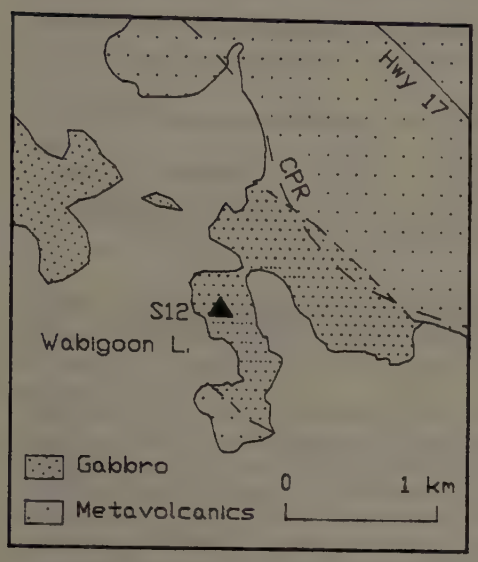
NTS Map 52 F/10
Hewitt (1972)
Sabina (1963)
Satterly (1943)
Spence (1922, 1940)
Wright (1924)
Wilson (1926)
Vos et al. (1982)

S12 WABIGOON PROSPECT

Commodity: Soapstone

Status: Prospect

Location: Zealand Township, District of Kenora.
NTS: 52F/10NE
Latitude: 49°43′27″ Longitude: 92°38′05″
UTM: 526150 m E, 5507750 m N, Zone 15.



***Location Map S12** — Wabigoon prospect.*

DESCRIPTION

Geological Setting: The area is underlain by altered gabbro.

Previous Geological Work: The area was mapped by Satterly (1943). The deposit was described by Spence (1922, 1940), Wright (1924; in Wilson 1926) and Satterly (1943). It was mentioned by Bartlett (in Sutherland et al. 1923), Hewitt (1972), Sabina (1963), and Vos et al. (1982). Satterly (1943, p.53) described the deposit as follows.

"The soapstone deposits occur in a gabbro mass, which underlies most of the peninsula, and the island to the northwest on which the Indian cemetery is located. This mass presumably extends under much of Barritt Bay, as it is found on islands and in the village of Wabigoon. The gabbro is, in places, fairly fresh but adjacent to the soapstone deposits it is highly altered. Two specimens of it studied in thin section under the microscope are found to consist of plagioclase with clouds of clinozoisite, felted aggregates of an amphibole probably derived from a pyroxene, and in one section a minor amount of quartz. The rock is believed to have been originally a gabbro, as related masses are of this composition. The soapstone is a dark grey, soft rock containing in some samples, rhombs of a brown carbonate. The soapstone has been trenched in two places, and Wright states that there are two bands. A thin section of grey soapstone with brown carbonate rhombs shows under the microscope an aggregate of antigorite with bands of magnetite, talc, chlorite, and an iron carbonate. This mineral assemblage indicates that the original rock was ultrabasic in composition."

Geology: The rock exposed is predominantly massive, fine- to medium-grained, dark green to dark grey gabbro. Soapstone occurs in two units trending west-northwest separated by a gabbro unit up to 50 m wide. The north soapstone unit is greenish grey in colour and is bounded by a narrow shear zone on either side. The soapstone varies in width from 15 to 20 m. The intervening gabbro unit varies in width and contains narrow talcose units; 50 m is the maximum width exposed on the property. The south talcose unit is dark blue-grey in colour on the fresh surface with numerous ankerite crystals that show up as rusty spots on the weathered surface. Most of the rock is strongly magnetic. Minor quartz-carbonate veinlets cut both the soapstone and the gabbro. Wright (in Wilson 1926) described a section across the deposit:

"The long axis of this intrusive mass is northwest-southeast, and the known length is approximately 2,000 feet. The dip, as nearly as can be determined, is vertical. The following rock-types are exposed along a section at right angles to the strike and crossing the soapstone outcrop from the northeast:

" 0-150 feet.	Slightly schistose, medium-grained, light grey, syenitic rock.
"150-225 feet.	Massive, slightly porphyritic, medium grained, dark grey, dioritic rock.
"225-275 feet.	Massive, coarse grained, light green, gabbroic rock.
"275-310 feet.	Massive, dark greenish grey soapstone exposed for about 400 feet along the strike.
"310-410 feet.	Massive, medium to coarse grained, light grey, syenitic rock.
"410-485 feet.	Mixed soapstone and gabbroic rock, with soapstone predominating, exposed about 300 feet along the strike."

The talcose material examined is in gradational contact over a short distance with the gabbroic rocks. Mapping by Satterly (1943) indicated that the gabbro mass containing the soapstone trends northwest and is a sill-like body conformable with the metavolcanics on either side.

Three samples of the soapstone were submitted for X-ray diffraction mineral analysis (Table 6.7). All samples analysed are from the north soapstone unit. Sample 82-36 was also checked for serpentine and did not contain any.

Samples

82-34A, 82-35A, 82-36, 83-231, 83-232, 83-233

History: The deposit was known for several years prior to 1920 but was first explored by L. Pidgeon of Wabigoon in 1921. Development work consisted of stripping, trenching and sampling. No work was done

TABLE 6.7. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM THE WABIGOON SOAPSTONE DEPOSIT (S12).

	82-34A	82-35A	82-36
Talc	-	A	B
Amphibole	C	-	-
Chlorite	A	C	A
Dolomite	-	C	BC
Calcite	BC	-	-
Magnesite	-	A	BC
Quartz	A	-	-
Feldspar	AB	-	-
Mica	C	-	-

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

after 1922 until recently when several small pits were sunk on the soapstone. Wabigoon Resources of Toronto currently holds the property and began a program of stripping and surface sampling in 1983.

References

NTS Map 52F/10
Bartlett in Sutherland et al. (1923)
Hewitt (1972)
Sabina (1963)
Satterly (1943)
Spence (1922, 1940)
Wright (1924)
Wright in Wilson (1926)
Vos et al. (1982)

S13 MICA POINT SOAPSTONE

Commodity: Soapstone

Status: Occurrence

Location: The deposit is located in the central part of Mica Point, Falcon Island, Lake of the Woods. A topographic feature called Pinnacle Rock was taken as a location point.

NTS: 52E/7 SW
Latitude: 49°20′00″ Longitude: 94°47′00″
UTM: 370400 m E, 5465800 m N, Zone 15.

Access: The deposit can be reached by boat.

DESCRIPTION

Geological Setting: The area is underlain by metavolcanics.

Previous Geological Work: The area was mapped by Lawson (1886) and was briefly described by Carlson (1955).

Geology: The rocks exposed on Mica Point are dark green to dark grey, massive and pillowed mafic metavolcanics trending 100° to 120° and dipping moderately (55° northward). Tops are to the north. The individual units are 10 to 20 m in thickness where this could be determined. There is a poor to moderate foliation parallel to the layering. Some of the massive units are soft and have a distinctly talcose feel. These are exposed at several locations across the point. These talcose zones are limited to 3 to 12 m in width and are of unknown but probably restricted length. Very soft material is present only in small amounts. Rusty weathering is developed on some of these zones. Most of the rock exposed in the central part of the point is pillowed. White granitic pegmatite is exposed on the south shore and pink aplite dikes and veins cut the metavolcanics in several places near the north shore. In the vicinity of these intrusive rocks, the metavolcanics are metamorphosed to a higher grade. Samples of the talcose material from several locations were submitted for X-ray diffraction mineral analysis (Table 6.8). These rocks are composed essentially of chlorite, amphibole and minor talc. From the X-ray results, the amphibole appears to be tremolite (calcium, monoclinic). Sample 83-212 appears to contain a second amphibole, possibly cummingtonite. The results are consistent with a mafic metavolcanic.

Samples

83-100A Massive dark grey-green fine-grained magnetic metabasalt; from the south side of the point.
83-100B Similar material to 100A.
83-211 Well foliated metavolcanics from the north-central part of Mica Point.
83-212 Massive talcose metavolcanics from the north-central part of Mica Point.

TABLE 6.8. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM THE MICA POINT SOAPSTONE DEPOSIT (S13).

	83-100A	83-100B	83-211	83-212
Chlorite	A	A	A	A
Talc	C	C	-	-
Amphibole	A	AB	A	A
Dolomite	-	-	-	-
Quartz	-	-	-	-
Magnesite	-	-	-	-
Mica	-	-	-	-
Plagioclase			-	-

Note:
A major, B moderate, C minor, D very minor.
(+ more, – less).
– not detected, ? uncertain identification.

History: The pegmatites have been investigated for feldspar, mica and beryl several times since 1880. The soapstone potential of the other rocks has not been evaluated.

References

NTS Map 52E/7
Carlson (1955)
Lawson (1886)

S14 PHILLIPS TOWNSHIP

Commodity: Soapstone

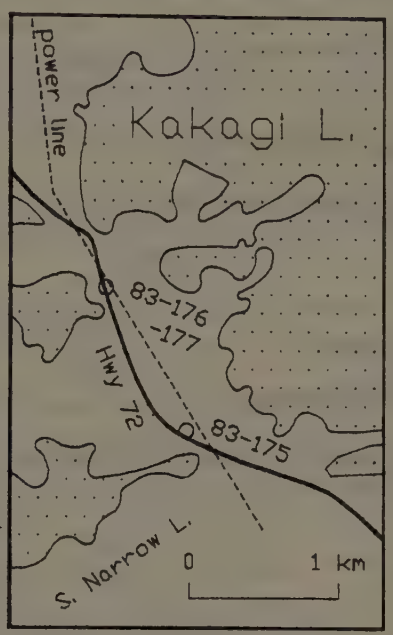
Status: Occurrence

Location: Central Phillips Township, District of Kenora. 13 km north of Nestor Falls. Sample 83-176 was taken as a location point.

NTS: 52F/4 NW

Latitude: 49°13′20″ Longitude: 93°59′22″

UTM: 427950 m E, 5452400 m N, Zone 15



***Location Map S14** — Phillips Township.*

Access: The deposit is exposed in a road cut on Highway 71.

DESCRIPTION

Geological Setting The area is underlain by intermediate to felsic metavolcanics intruded by mafic intrusive rocks.

Previous Geological Work: The area was mapped by Burwash (1934) and Kaye (1981).

Geology: The gabbro examined is a dark green, fine-grained rock with abundant joints and rapid changes in grain size and mineralogy. The soapstone body has a width of 50 m and undetermined length. The outcrop examined consisted of altered gabbro. The freshest part of the gabbro resembled other gabbro outcrops examined in the immediate area. The altered parts are soft, foliated to schistose with a foliation trending 150°/65-90°N. The strongest foliation corresponds to the most talcose material. Samples of unaltered gabbro from a nearby outcrop and two samples from the soapstone deposit were submitted for X-ray diffraction mineral analysis (Table

6.9). The shear zone material and the more massive soapstone have the same composition.

TABLE 6.9. X-RAY DIFFRACTION MINERAL ANALYSES OF SAMPLES FROM THE PHILLIPS TOWNSHIP SOAPSTONE DEPOSIT (S14).

	83-175	83-176	83-177
Chlorite	A	A	A
Mica	-	-	-
Talc	-	A	A
Amphibole	A	C	C
Plagioclase	-	-	-
Quartz	C	-	-
Calcite	-	-	-
Dolomite	-	B	B

Note:
A major, B moderate, C minor, D very minor.
(+ more, − less).
− not detected, ? uncertain identification.

Samples

83-175 Unaltered gabbro.
83-176 Soapstone.
83-177 Well foliated soapstone.

History: There has been no recorded extraction of soapstone from this deposit.

References

NTS Map 52 F/4
Burwash (1934)
Kaye (1981)

S15 PIPESTONE BAY (RED LAKE)

Commodity: Soapstone

Status: Occurrence

Location: Ball Township, District of Kenora. The deposit was not examined.

NTS: 52M/1SE

DESCRIPTION

This deposit was not examined. Horwood (1945, p.27) described the rock as follows.

"Greenstones that have been almost entirely altered to talc were found at four localities: on the Cole property west of Pipestone bay, in Phillips channel at the outlet of Pipestone bay, on the Middle Bay Property north of Trout bay and at the Madsen mine in Baird Township. The talcose rock on the Cole property is a soft, medium-grained, rusty-grey-weathering material, which in places shows gradations to a less altered rock, the rock is light-grey in colour. It is much too impure to be of any commercial value. Small cracks in the rock contain stringers of pure talc with a maximum width of about an inch. The talc rock at the outlet of Pipestone bay was used by the Indians for making pipes and is locally known as 'Pipestone.' The rock is lighter-coloured than that at the Cole property and appears to have been more completely altered. In thin section it is found to be composed of carbonate grains, surrounded by a fine-grained matrix of talc, and a little magnetite and pyrite. Other less pure specimens contain serpentine and a little quartz as well as carbonate and talc. Microscope work indicates that the basic greenstones have been altered first to serpentine-bearing rocks, then by the replacement action of hydrothermal solutions to serpentine-carbonate rocks, and in places to almost pure magnesium carbonates. The talc rocks on the Middle Bay claims are light-green to grey-green talc schists and are associated with basic greenstones. They are not as talcose as the rocks at the outlet of Pipestone bay. Talc rocks at the Madsen mine occur between a volcanic tuff formation and a diorite dike. The talcose horizon represents a zone of intense shearing and alteration in the diorite along the contact with the more competent tuff."

Riley (1975) mapped this area and designated the talcose rocks as altered mafic to ultramafic intrusive rocks, in places containing asbestiform minerals.

History: This rock has reportedly been used by the native people for carving pipes.

References

Horwood (1945)
Riley (1975)

7. Appendix — Sample Descriptions

All samples taken during field work are listed. Locations are given by legislative district, township where these exist, NTS and UTM coordinates. The NTS index is given in Figure 7.1.

Samples marked with an asterisk may have some potential as sources of small amounts of decorative stone. These are not included in the deposit descriptions of the preceding sections.

Figure 7.1. NTS index map.

Sample 82-1
Commodity: Granite
Colour: Grey
Lithology: Granite
Dist./Tp: Kenora/Forgie
NTS: 52E/10NW
UTM: 362700 m E, 5509500 m N
Description: Biotite-hornblende granite; approximately 10-15% mafic minerals; massive to weakly foliated; contains a few xenoliths; joint spacing about 0.3 m, variable up to 6 m; overburden cover 50-60%.

Sample 82-2
Commodity: Slate
Colour: Black
Lithology: Slate
Dist./Tp: Kenora/Forgie
NTS: 52E/10NW
UTM: 360000 m E, 5506000 m N
Description: Rush Bay quarry; fine-grained metasediments; thin interbed.

Sample 82-3
Commodity: Slate
Colour: Black
Lithology: Slate
Dist./Tp: Kenora/Forgie
NTS: 52E/10NW
UTM: 360000 m E, 5506000 m N
Description: Rush Bay quarry; fine-grained inter-unit metasediments.

Sample 82-4
Commodity: Flagstone
Colour: Rusty grey
Lithology: Felsic tuff
Dist./Tp: Kenora/Forgie
NTS: 52E/10NW
UTM: 360000 m E, 5506000 m N
Description: Rush Bay quarry; sheared lapilli tuff similar to material quarried but with irregular parting due to undeformed fragments.

Sample 82-5
Commodity: Flagstone
Colour: Light grey
Lithology: Metasediment
Dist./Tp: Kenora/Forgie
NTS: 52E/10NW
UTM: 361800 m E, 5504900 m N
Description: Poorly exposed; size of body not known; well foliated.

Sample 82-6
Commodity: Flagstone
Colour: Dark green
Lithology: Mafic metavolcanic
Dist./Tp: Kenora/Forgie
NTS: 52E/10NW
UTM: 358050 m E, 5502300 m N
Description: Sheared mafic metavolcanic from the Crowduck lineament.

Sample 82-7
Commodity: Granite
Colour: Grey
Lithology: Granite
Dist./Tp: Kenora/Rice
NTS: 52E/14NW
UTM: 349600 m E, 5528900 m N (approx. location of main quarry)
Description: CNR White quarry; hornblende-biotite granite; contains up to 30% mafic rock; fractured, often with swirly mafic segregations; contains xenoliths and pegmatite dikes.

Sample 82-8
Commodity: Granite
Colour: Pink
Lithology: Pegmatite
Dist./Tp: Kenora/Rice
NTS: 52E/14NW
UTM: 349600 m E, 5528900 m N
Description: Pegmatite from CNR White quarry; shows hematite and minor smoky quartz.

Sample 82-9
Commodity: Variegated granite
Colour: Pink
Lithology: Granitoid rock
Dist./Tp: Kenora/Melick
NTS: 52E/16NW
UTM: 399050 m E, 5526100 m N
Description: Nebulitic gneissic granitoid rock.

Sample 82-10
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Melick
NTS: 52E/16NW
UTM: 400200 m E, 5527400 m N
Description: Weakly gneissic with pink pegmatite and aplite similar to White quarry; fractured.

Sample 82-11
Commodity: Granite
Colour: Grey
Lithology: Granodiorite
Dist./Tp: Kenora
NTS: 52E/9NW
UTM: 398750 m E, 5506350 m N
Description: CPR Quarry Island; biotite granodiorite sheeting 1 to 3 m; joint spacing 1 m and greater.

Sample 82-12
Commodity: Flagstone
Colour: Grey-green
Lithology: Metavolcanic

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 400900 m E, 5504800 m N

Description: Fine-grained, interflow metasediments and fine grained tuffaceous matasediments intercalated with mafic metavolcanics; well-developed foliation; fine-grained parts split well.

Sample 82-13
Commodity: Decorative stone
Colour: Black
Lithology: Ultramafic intrusive rock

Dist./Tp: Kenora
NTS: 52E/10NE
UTM: 387800 m E, 5503000 m N

Description: Highly fractured into 30 cm and smaller pieces; weathered deeply.

Sample 82-14*
Commodity: Decorative stone
Colour: Light green
Lithology: Felsic metavolcanic

Dist./Tp: Kenora
NTS: 52E/10NE
UTM: 388500 m E, 5503050 m N

Description: Felsic tuff with regular blocky jointing less than 1 m apart.

Sample 82-15
Commodity: Granite
Colour: Pink to white
Lithology: —

Dist./Tp: Kenora
NTS: 52F/12NW
UTM: 432200 m E, 5509450 m N

Description: Variable colour; joints 1 to 2 m apart; many pegmatite and aplite dikes of all orientation; 5 to 10% biotite; grain size uniform; medium to coarse grained; massive.

Sample 82-16
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora
NTS: 52F/12NW
UTM: 432100 m E, 5509800 m N

Description: Massive fine-grained rock, intrusive into 82-15; similar jointing pattern; small body (30 m wide).

Sample 82-17
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Kenora
NTS: 52F/12NW
UTM: 431500 m E, 5505800 m N

Description: Fine-grained, light grey, biotite granite; 1 m sheeting; size of body is obscured by overburden.

Sample 82-18
Commodity: Granite
Colour: Pink
Lithology: Granite

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 410050 m E, 5508300 m N

Description: Epidote-bearing quartz and feldspar porphyritic granite; about 3% of each type of phenocryst. Joints and sheeting are less than 1 m but this may be blasting damage from highway construction. The phenocryst content increases to the south. Quartz phenocrysts are white to light grey, rounded and up to 1 m diameter; feldspar phenocrysts are pink, 2-4 mm long, occasionally up to 1 cm. Epidote is disseminated and also occurs in joint planes. Little or no mafic content.

Sample 82-19
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Same as 82-18.

Sample 82-20
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: 52E/9NW
UTM: 409300 m E, 5508950 m N

Description: Similar to 82-18, but contains 5% biotite and no phenocrysts.

Sample 82-21
Commodity: Granite
Colour: Pink
Lithology: Granite

Dist./Tp: Kenora/Docker
NTS: 52F/13SE
UTM: 463750 m E, 5519350 m N

Description: Vermilion Bay granite.

Sample 82-22
Commodity: n/a
Colour: Dark green
Lithology: Metavolcanic

Dist./Tp: Kenora
NTS: 52F/11NW
UTM: 476900 m E, 5501650 m N

Description: Eagle Lake soapstone quarry; sample from north contact of metavolcanic and granitoid rocks.

Sample 82-23
Commodity: Soapstone
Colour: Grey-green
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Material quarried for refractory use; Eagle Lake soapstone quarry.

Sample 82-23A
Commodity: Soapstone
Colour: Grey-green
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Duplicate sample of 82-23

Sample 82-24
Commodity: Granite
Colour: Pink
Lithology: Granite

Dist./Tp: Kenora/Zealand
NTS: 52F/15SW
UTM: 514900 m E, 5517950 m N

Description: Muscovite granite; medium grained with pegmatitic patches often with perthitic feldspar and small muscovite books; sample shows garnet and tourmaline; joints 1 m apart; size of deposit is not known due to overburden.

Sample 82-25*
Commodity: Granite
Colour: Pink
Lithology: Gneissic granite

Dist./Tp: Kenora/Stokes
NTS: 52F/15NE
UTM: 520600 m E, 5535050 m N

Description: Gneissic granite; medium grained; grain size is variable with feldspar up to 1 cm; outcrop is cut by patch and dike pegmatites; gneissosity is due to biotite segregation and convoluted, particularly near the pegmatites; joints are 3 m apart.

Sample 82-26
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Breithaupt
NTS: 52F/15NE
UTM: 522650 m E, 5537850 m N

Description: Gneissic; similar to 82-25 but coarser; colour varies from grey to pink; pink is predominant.

Sample 82-27
Commodity: Soapstone
Colour: Dark grey
Lithology: Altered ultramafic intrusive rock

Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 515850 m E, 5501350 m N

Description: Trap Lake soapstone prospect.

Sample 82-28
Commodity: Soapstone
Colour: Dark grey
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Trap Lake soapstone prospect; shows dolomite-ankerite vein.

Sample 82-29
Commodity: Soapstone
Colour: Dark grey
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Trap Lake soapstone deposit; joints are 1-2 m apart; sheeting 0.5 m; similar to 82-27.

Sample 82-30
Commodity: Soapstone
Colour: Dark grey
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Trap Lake soapstone deposit.

Sample 82-31
Commodity: Black granite
Colour: Dark grey
Lithology: Altered gabbro
Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 514500 m E, 5500700 m N
Description: Rock exposed on islands near the soapstone; presumably this is similar to the rock that was altered to form soapstone.

Sample 82-32*
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 514800 m E, 5501350 m N
Description: Massive; joints 1 m apart; sheeting up to 1 m.

Sample 82-33
Commodity: Soapstone
Colour: Dark grey
Lithology: Altered ultramafic rock
Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 516450 m E, 5503700 m N
Description: Mile Lake No. 1 deposit.

Sample 82-34
Commodity: Soapstone
Colour: Dark grey
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: 52F/10NW
UTM: 515700 m E, 5503700 m N
Description: Mile Lake No. 2 deposit.

Sample 82-34A
Commodity: Soapstone
Colour: Dark green
Lithology: Altered gabbro
Dist./Tp: Kenora/Zealand
NTS: 52F/10NW
UTM: 526150 m E, 5507750 m N
Description: Wabigoon soapstone deposit; sample contains carbonate.

Sample 82-35*
Commodity: Black granite
Colour: Dark green
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 515800 m E, 5503700 m N
Description: Medium grained; contains granophyric material and minor sulphides.

Sample 82-35A
Commodity: Soapstone
Colour: Dark green
Lithology: Altered gabbro
Dist./Tp: Kenora/Zealand
NTS: 52F/10NE
UTM: 526150 m E, 5507750 m N
Description: Wabigoon soapstone deposit.

Sample 82-36
Commodity: Soapstone
Colour: Dark green
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Wabigoon soapstone deposit.

Sample 82-37*
Commodity: Granite
Colour: Pink
Lithology: Pegmatite
Dist./Tp: Kenora/Bridges
NTS: 52F/13SE
UTM: 450800 m E, 5520450 m N (approx. location)
Description: Homogeneous, biotite, graphic granite pegmatite; outcrops along Highway 17; lit par lit intrusion of pegmatite into gneiss.

Sample 82-38.
Commodity: Granite
Colour: Pink
Lithology: Pegmatite
Dist./Tp: Kenora/MacNicol
NTS: 52F/13SW
UTM: 428150 m E, 5518500 m N
Description: Homogeneous, biotite quartz-feldspar pegmatite dike; 8.5 m wide trending 212°/90°; feldspar is flesh pink to white in colour; abundant hematite gives the rock a red tinge; host rock is fine-grained amphibolite.

Sample 83-39
Commodity: Flagstone
Colour: Light grey-brown
Lithology: Metavolcanic
Dist./Tp: Kenora
NTS: 52E/10NE
UTM: 384900 m E, 5501900 m N
Description: Fox Island; schistose lapilli tuff; splits readily into thin slabs.

Sample 82-40
Commodity: Flagstone
Colour: Pink
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: 52E/10NE
UTM: 384300 m E, 5501300 m N
Description: Fox Island; schistose felsite dike.

Sample 82-41
Commodity: Flagstone
Colour: Grey
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Similar to 82-40.

Sample 82-42
Commodity: Soapstone
Colour: Dark green
Lithology: Ultramafic intrusive rock
Dist./Tp: Kenora
NTS: 52E/10SW
UTM: 367600 m E, 5496350 m N
Description: Labyrinth Bay occurrence.

Sample 82-43
Commodity: Serpentine
Colour: Dark green
Lithology: Ultramafic rock
Dist./Tp: Kenora
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Labyrinth Bay occurrence; serpentinized ultramafic intrusive rock.

Sample 82-44
Commodity: n/a
Colour: White
Lithology: Amphibole (tremolite?)
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Narrow (1 m) veinlets of this material cut 82-43 rock.

Sample 82-45
Commodity: n/a
Colour: Dark green
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: 52E/10SW
UTM: 367700 m E, 5496400 m N
Description: Mafic metavolcanic host rock for soapstone deposit.

Sample 82-46
Commodity: Marble
Colour: Light grey
Lithology: Carbonate vein
Dist./Tp: Same as previous sample.
NTS: 52E/9NW
UTM: 392550 m E, 5499250 m N
Description: Quartz-carbonate vein hosted in well foliated metavolcanics on the north side of Gaherty Island; carbonate is dolomite (probably ankerite as well); quartz is a minor constituent; carbonate vein is 6 m wide and of undetermined length; vein trends 090°/90°.

Sample 82-47
Commodity: Flagstone
Colour: Green
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52E/9NW
UTM: 392400 m E, 5499250 m N
Description: Foliated lapilli tuff host rock for 82-46; splits readily but the surface is soft; feels talcose and scratches with a finger-nail; foliation is oriented 090°/90°.

Sample 82-48
Commodity: Slate
Colour: Dark grey
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: 52E/9NW
UTM: 393500 m E, 5499400 m N
Description: Slate Island; schistose rock; foliation surface is soft and variable in colour with a definite pink tint.

Sample 82-49
Commodity: Black granite
Colour: Black
Lithology: Diabase
Dist./Tp: Same as previous sample.
NTS: 52E/10NE
UTM: 390800 m E, 5505200 m N
Description: Fine to medium grained porphyritic diabase; feldspar phenocrysts are rare; grain size increases continuously from contact to centre.

Sample 82-50
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52E/8NW
UTM: 404350 m E, 5470100 m N
Description: Massive biotite granite with occasional knots; approximately 15% biotite; feldspar phenocrysts up to 2 cm; joints are spaced 0.6 to 2 m apart.

Sample 82-51
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52E/8SW
UTM: 403400 m E, 5469050 m N

Description: Massive biotite granite with xenoliths; joints spaced 1.3 m; fine grained granitoid dikes are common.

Sample 82-52
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52E/8NW
UTM: 402850 m E, 5470650 m N

Description: Fine grained massive biotite granite with minor pink aplite patches; joints 1-2 m apart.

Sample 82-53
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Kenora/Boys
NTS: 52E/10NW
UTM: 364200 m E, 5509100 m N

Description: Foliated, porphyritic biotite-hornblende granite; feldspar phenocrysts are pink; contains knots 10 to 20 cm long; joints spaced 1.3 m; sheeting is 2 m and greater; iron staining is common along the joints; occasional 2 to 4 cm aplite and quartz veins.

Sample 82-54
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52E/10NW
UTM: 365850 m E, 5508250 m N

Description: Massive pink porphyritic; feldspar phenocrysts to 3 cm; thin sheeting and many knots; colour is variable from pink to pinkish grey.

Sample 82-55
Commodity: Granite
Colour: Pink
Lithology: Granodiorite

Dist./Tp: Same as previous sample.
NTS: 52E/10NW
UTM: 365250 m E, 5508450 m N

Description: Foliation 010-020°/90°; knots are rare; sheeting forms 0.3 m zones of close-spaced sheets about 6 m apart; colour varies over distances of 100 m.

Sample 82-56
Commodity: Granite
Colour: Pink
Lithology: Granodiorite

Dist./Tp: Kenora/LeMay
NTS: 52E/9NE
UTM: 413150 m E, 5501550 m N

Description: Massive pink biotite granodiorite; colour varies from deep pink to light pinkish grey over distances of 15 to 30 m; joints approximately 1 m; sheeting approximately 1 m; occasional knots and one sulphide patch; epidote occurs in some of the joints.

Sample 82-57
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52E/9NE
UTM: 414900 m E, 5500100 m N

Description: Similar to 82-56 but lighter pink.

Sample 82-58*
Commodity: n/a
Colour: Dark green
Lithology: Metavolcanic

Dist./Tp: Kenora/Tweedsmuir
NTS: 52F/5SW
UTM: 428100 m E, 5467950

Description: Mafic metavolcanics with quartz-carbonate-epidote veins and disseminated pyrite; rusty weathering and variable vein content.

Sample 82-59
Commodity: n/a
Colour: Light
Lithology: Metavolcanic

Dist./Tp: Kenora/Devonshire
NTS: 52E/8NE
UTM: 426400 m E, 5480100 m N

Description: Weakly foliated quartz-feldspar porphyry with disseminated sulphides.

Sample 82-60
Commodity: n/a
Colour: Light
Lithology: Metavolcanic

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Massive quartz-feldspar porphyry with disseminated grey sulphides; quartz and feldspar phenocrysts up to 4 mm.

Sample 82-60A
Commodity: Serpentine
Colour: Dark green
Lithology: —

Dist./Tp: Kenora/Phillips
NTS: 52F/4NW
UTM: 434250 m E, 5454750

Description: Dark green, massive to foliated, altered ultramafic rock; outcrop is extensively fractured; cut by minor veins of asbestiform minerals.

Sample 82-61
Commodity: Asbestos
Colour: White
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: From vein cutting 82-60A.

Sample 82-62
Commodity: Schist
Colour: Dark green
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52F/4NW
UTM: 434900 m E, 5454950 m N

Description: Sheared metagabbro; minor talc in foliation; rusty weathering; minor carbonate and hematite staining.

Sample 82-63
Commodity: n/a
Colour: Black
Lithology: Ultramafic rock

Dist./Tp: Kenora/Godson
NTS: 52F/4NW
UTM: 440000 m E, 5453800 m N

Description: Joints 1 to 2 m apart; thick sheeting; 0.5 cm weathered rind; many fine fractures on surface; fine grained.

Sample 82-64*
Commodity: Black granite
Colour: Black
Lithology: Gabbro

Dist./Tp: Kenora/Phillips
NTS: 52F/4NW
UTM: 429750 m E, 5450850 m N

Description: Joints 0.5 m apart; massive, fine grained, with slight greenish tint; minor quartz veins and quartz-feldspar pegmatite have developed in the joints; outcrop is cut by a shear zone 0.6 m wide.

Sample 82-65
Commodity: Black granite
Colour: Black
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Similar to 82-64 but more layered; separated from 82-64 by the shear zone mentioned above.

Sample 82-66
Commodity: Black granite
Colour: Black
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Similar to 82-64; from south end of same outcrop.

Sample 82-67
Commodity: Soapstone
Colour: Black to dark green
Lithology: Altered gabbro

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Shear zone material; feels talcose.

Sample 82-68*
Commodity: Black granite
Colour: Black
Lithology: Diabase

Dist./Tp: Rainy River/Menary
NTS: 52C/13NW
UTM: 432200 m E, 5424900 m N

Description: Fine to medium grained dike rock; joints 20 cm to 1.3 m apart; trace of disseminated pyrite; dike is 30-60 m wide.

Sample 82-69
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Rainy River/Rowe
NTS: 52C/13NW
UTM: 427800 m E, 5423850 m N

Description: Joints spaced 1.5 to 3 m and greater; massive; very few knots; uniform grain size; uniformly medium grained over a large area.

Sample 82-70
Commodity: Granite
Colour: Pink
Lithology: Granodiorite

Dist./Tp: Rainy River/Potts
NTS: 52C/13NW
UTM: 434500 m E, 5414350 m N

Description: Finland stock; fine grained; brown-grey; joints 1.5 m apart; poor exposure; occasional aplite dikes; sample taken near contact of body.

Sample 82-71
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: 52C/13SW
UTM: 434400 m E, 5411900 m N
Description: Finland stock (south part); massive; medium grained; joints 1 m apart; uniform colour and texture but exposures are not large.

Sample 82-72
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.
Dist./Tp: Rainy River/Mather
NTS: 52C/13SW
UTM: 428650 m E, 5408200 m N
Description: Blackhawk stock; very weak foliation; close spaced joints; small exposure.

Sample 82-73
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: 52C/13SW
UTM: 427700 m E, 5407200 m N
Description: Blackhawk stock; massive; porphyritic with numerous knots close to contact of body; small exposure.

Sample 82-74
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52C/13SW
UTM: 432900 m E, 5406400 m N
Description: Massive, medium grained; minor quartz veins; joints 1 to 2 m apart.

Sample 82-74A
Commodity: n/a
Colour: Dark blue-green
Lithology: Peridotite
Dist./Tp: Rainy River
NTS: 52F/4SW
UTM: 452250 m E, 5431650 m N
Description: Highly fractured, altered peridotite; minor talc-serpentine developed in fractures; numerous close spaced fracture and joints.

Sample 82-75
Commodity: n/a
Colour: Dark green
Lithology: Peridotite
Dist./Tp: Same as previous sample.
NTS: 52F/4SW
UTM: 452900 m E, 5432100 m N
Description: Foliated altered peridotite; carbonate veins and talcose material in the foliation; similar to 82-74A before alteration.

Sample 82-76
Commodity: Soapstone
Colour: Grey
Lithology: Altered peridotite
Dist./Tp: Same as previous sample.
NTS: 52F/4SW
UTM: 459350 m E, 5434600 m N
Description: Fine grained, rusty weathering; 3 m wide zone; developed from peridotite similar to 82-74A.

Sample 82-77
Commodity: n/a
Colour: Dark blue-green
Lithology: Peridotite
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Fine grained, massive peridotite from same location as 82-76; gradational contact over 1 m with 'soapstone'.

Sample 82-78
Commodity: n/a
Colour: Light green-grey
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52F/4SW
UTM: 459850 m E, 5435200 m N
Description: Fine to medium grained, altered gabbro; weakly foliated.

Sample 82-79*
Commodity: Decorative stone
Colour: Dark grey to black
Lithology: Lamprophyre
Dist./Tp: Same as previous sample.
NTS: 52F/4SW
UTM: 461100 m E, 5434200 m N
Description: Coarse grained, biotite lamprophyre dike; joints less than 1 m apart; no foliation.

Sample 82-80
Commodity: Decorative stone
Colour: Dark Grey
Lithology: Lamprophyre
Dist./Tp: Rainy River
NTS: Same as previous sample.
UTM: 461100 m E, 5434200 m N
Description: Same dike as 82-79 but sample shows carbonatization.

Sample 82-81
Commodity: Granite
Colour: Pinkish white
Lithology: Pegmatite
Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 444600 m E, 5523300 m N
Description: Homogeneous pegmatite with dark red garnet; garnets are euhedral up to 5 mm but extensively fractured.

Sample 82-82
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 443650 m E, 5524200 m N
Description: Weakly foliated granite; joints 1.5 m apart; colour varies over short distance; outcrop is cut by minor pegmatite dikes and patches.

Sample 82-83
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 443650 m E, 5524300 m N
Description: Close to 82-82; gneissic biotite granite cut by numerous white pegmatites; joints as 82-82.

Sample 82-84
Commodity: Pegmatite
Colour: White
Lithology: Pegmatite
Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 444500 m E, 5523500 m N
Description: Sample of white microcline only.

Sample 82-85*
Commodity: Pegmatite
Colour: White
Lithology: Pegmatite
Dist./Tp: Kenora/Tustin
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Homogeneous white granitoid pegmatite; a coarser phase of pegmatite veins and patches with biotite and smoky quartz cuts a finer pegmatite phase with minor smoky quartz and garnet.

Sample 82-86*
Commodity: Granite
Colour: Pink
Lithology: Pegmatite
Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 444000 m E, 5520750 m N
Description: Biotite granitoid pegmatite with abundant red garnet has coarse patches and fracture fillings of a second phase containing minor muscovite.

Sample 82-87*
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 432550 m E, 5522950 m N
Description: Pink syenite cut by numerous pink pegmatites; medium grained, massive; wide spaced joints, but thin (1 m and less) sheeting; feldspar-porphyritic in the south part of the body.

Sample 82-88
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52E/10SW
UTM: 365600 m E, 5493550 m N
Description: Massive, fine to medium grained, hornblende granite; 15 to 20% hornblende; minor aplite dikes and finer grained patches; joints variable from less than 0.5 m.

Sample 82-89
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52E/10SW
UTM: 365600 m E, 5493300 m N
Description: Same body as 82-88, but central part contains little or no mafic minerals; joints 1 m apart; minor disseminated pyrite.

Sample 82-90
Commodity: Gabbro
Colour: Black
Lithology: —
Dist./Tp: Kenora/Glass
NTS: 52E/10SW
UTM: 357100 m E, 5496100 m N
Description: Massive, joints vary from close to 2.5 m (in places 15 cm); 2 mm weathered rind; minor carbonate veins in joints.

Sample 82-91
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora/Glass
NTS: 52E/10SW
UTM: 358200 m E, 5496300 m N
Description: Massive, medium grained; close joints (15-30 cm).

Sample 82-92
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Lemay
NTS: 52E/9NE
UTM: 417350 m E, 5499950 m N
Description: Massive, fine to medium grained, colour varies from medium to dark grey with local pinkish tints; pink granitoid veins and dikes; joints 1-2 m apart.

Sample 82-93
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Lemay
NTS: 52E/9NE
UTM: 417700 m E, 5499500 m N
Description: Massive; more uniform colour than 82-92; minor knots; joints 1-2 m and greater spacing; sheeting 0.3 to 1 m.

Sample 82-94
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Burk
NTS: 52G/6SW
UTM: 621300 m E, 5463700 m N
Description: CPR Bonheur quarry; medium grained, gneissic granite with numerous pink pegmatite dike and veins.

Sample 82-95
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Bradshaw
NTS: 52G/5NW
UTM: 585800 m E, 5481350 m N
Description: Gummesson prospect; small outcrop of massive, fine grained granite north of the main prospect.

Sample 82-96*
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora/Ignace
NTS: 52G/5SE
UTM: 599700 m E, 5476100 m N
Description: Massive, medium grained granite; a few pink pegmatite veins and patches; joints 1-2 m apart; joints often show hematite stain and bleaching of the granite for 1-2 cm on each side.

Sample 82-97*
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52G/11SW
UTM: 613650 m E, 5488150 m N
Description: Similar to 82-96.

Sample 82-98*
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Similar to 82-96, but colour is more variable from purple to reddish pink.

Sample 82-99
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora
NTS: 52G/11NW
UTM: 627400 m E, 5506500 m N
Description: Grey gneiss; cut by narrow pegmatite dikes; 15-20% biotite; gneissosity is not strongly developed.

Sample 82-100*
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52G/14SE
UTM: 630850 m E, 5514450 m N
Description: Joints 1 m apart, often with rusty weathering in joint plane; no rust on surface of rock; colour varies from black to black with white flecks (feldspar crystals); trace of disseminated pyrite; flow textures (?) trending 100°.

Sample 82-101*
Commodity: Black granite
Colour: Dark green
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52G/14SE
UTM: 631500 m E, 5518900 m N
Description: Pike Lake intrusion; medium grained with irregularly distributed pyrite and pyrrhotite; foliated in places; cut by carbonate veins; a few blue quartz eyes.

Sample 82-102*
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora
NTS: 52G/14SE
UTM: 636550 m E, 5522200 m N
Description: Beidelman Bay Pluton; fine to coarse grained; inclusions of fine-grained felsite; cut by quartz carbonate veins; colour varies over short distance; much of the rock contains bluish quartz phenocrysts; the rock is a subvolcanic porphyry rather than a true granite.

Sample 82-103
Commodity: Granite
Colour: Dark grey
Lithology: —
Dist./Tp: Kenora
NTS: 52G/14SE
UTM: 630300 m E, 5520600 m N
Description: Pike Lake intrusion; medium grained; contains minor disseminated sulphides; outcrop is cut by small quartz veins.

Sample 82-104
Commodity: Black granite
Colour: Blue-grey
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52G/14NE
UTM: 635550 m E, 5531450 m N
Description: Massive, fine to medium grained; joints 0.5 m spacing; outcrop is cut by minor quartz veins and has talcose material in fractures.

Sample 82-105
Commodity: Granite
Colour: Grey
Lithology: Granite
Dist./Tp: Kenora/Bradshaw
NTS: 52G/5NW
UTM: 585950 m E, 5481200 m N
Description: Gummeson prospect; massive; joints 2 to 6 m spacing; large parts of the outcrop have no visible joints; fine grained; sheeting 1 to 3 m.

Sample 82-106
Commodity: Granite
Colour: Light grey
Lithology: Granodiorite
Dist./Tp: Kenora
NTS: 52F/9SE
UTM: 560150 m E, 5487050 m N
Description: Massive biotite granodiorite, medium grained; wide-spaced joints; no knots or inclusions.

Sample 82-107
Commodity: Granite
Colour: Grey
Lithology: Granodiorite
Dist./Tp: Kenora/Revell
NTS: 52F/9SE
UTM: 558150 m E, 5492250 m N
Description: Massive, medium grained, hornblende biotite granodiorite; possible minor pyrite content; poorly exposed outcrop.

Sample 82-108
Commodity: Granite
Colour: Light grey
Lithology: Granodiorite
Dist./Tp: Kenora/Revell
NTS: 52F/9SE
UTM: 555550 m E, 5490400 m N
Description: Massive, biotite granodiorite; less than 10% biotite; joints 0.6 to 6 m and greater spacing, most are greater than 6 m; old pit in outcrop; no visible knots or inclusions

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Sample 82-108A
Commodity: Granite
Colour: Light grey
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same as 82-108.

Sample 82-109*
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora/Hartman
NTS: 52F/9NW
UTM: 538350 m E, 5509200 m N
Description: Hartman Lake stock; fine to medium grained; close spaced joints (1 m); rock has minor chlorite; no visible biotite or hornblende; rock seems very brittle; cut by minor pegmatite and aplite dikes.

Sample 82-110
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Docker
NTS: 52F/13SE
UTM: 463600 m E, 5518500 m N

Description: Gneissic biotite-rich layer (up to 60% biotite), 2-15 mm thick, alternating with pink quartz- and feldspar-rich layers 1/2 to 5 cm thick; outcrop shows lit par lit pegmatite intrusion; joints 2 m and greater spacing.

Sample 82-111
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Docker
NTS: 52F/13SE
UTM: 463450 m E, 5518300 m N

Description: Similar to 82-110 (same rock unit), but from part of outcrop area with more distinct contrast between gneissic layers; rock tends to split along the layering.

Sample 82-112
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Docker
NTS: 52F/13SE
UTM: 459800 m E, 5521800 m N (approx. location)

Description: Massive biotite granite; wide spaced joints; sheeting 2 m; pegmatite dikes seen in float of similar rock and in outcrops nearby; similar in appearance to Vermilion Bay granite.

Sample 82-113
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Docker
NTS: 52F/13SE
UTM: 459250 m E, 5520150 m N

Description: Massive; joints at 5 to 6 m spacing; approximately 5% biotite; occasional feldspar phenocrysts; similar in appearance to Vermilion Bay granite.

Sample 82-114*
Commodity: Granite
Colour: Red
Lithology: Pegmatite

Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 437950 m E, 5521600 m N

Description: Deep pink-red pegmatite; joints at 1 m spacing; occasional knots of magnetite; very few mafic minerals; shows coarse pegmatite patches; several outcrops of similar material nearby but individual bodies are small.

Sample 82-115*
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Coarse pegmatite from 82-114 location.

Sample 82-116*
Commodity: Granite
Colour: Red
Lithology: Pegmatite

Dist./Tp: Same as previous sample.
NTS: 52F/13SW
UTM: 434000 m E, 5521500 m N

Description: Coarse pegmatite; 10 cm grain size; close sheeting (0.5 m and less); black amphibolite inclusions; contains much hematite and smoky quartz.

Sample 82-117
Commodity: Granite
Colour: Pink
Lithology: Granite

Dist./Tp: Kenora/Docker
NTS: 52F/13SE
UTM: 463750 m E, 5519350 m N

Description: Vermilion Bay granite.

Sample 82-118
Commodity: Granite
Colour: Light grey
Lithology: Granite

Dist./Tp: Kenora/Bradshaw
NTS: 52G/5NW
UTM: 585800 m E, 5479200 m N

Description: Butler quarry; granite; massive, fine grained; wide spaced joints; sheeting 1 m and greater; approximately 10% mafic content; colour varies slightly with grain size.

Sample 82-119
Commodity: Talc
Colour: Green
Lithology: —

Dist./Tp: Kenora/Baird
NTS: 52K/13NW
UTM: 435500 m E, 5646500 m N

Description: Talcose rock from Madsen mine (Red Lake).

Sample 82-120
Commodity: n/a
Colour: Black
Lithology: Amphibolite

Dist./Tp: Kenora/MacNichol
NTS: 52F/13SW
UTM: 436350 m E, 5521300 m N

Description: Weathered amphibolite inclusion in migmatite; forms small black sand deposit.

Sample 82-121
Commodity: n/a
Colour: Black
Lithology: Altered metavolcanic

Dist./Tp: Kenora/Brownridge
NTS: 52F/15SE
UTM: 524000 m E, 5517600 m N (approx. location)

Description: Mavis Lake area; glimmerite in host rock for pegmatite (altered metavolcanic), adjacent to pegmatite.

Sample 82-122*
Commodity: Pegmatite
Colour: White
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Mavis Lake area; fine-grained, quartz-albite pegmatite.

Sample 82-123*
Commodity: Pegmatite
Colour: White
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Mavis Lake area; feldspar from spodumene-bearing pegmatite.

Sample 82-124*
Commodity: Pegmatite
Colour: White

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Mavis Lake area; spodumene-muscovite-quartz-feldspar pegmatite with minor beryl.

Sample 82-125
Commodity: Granite
Colour: Pink
Lithology: Granite

Dist./Tp: Kenora
NTS: 52L/2SW
UTM: 371300 m E, 5546000 m N

Description: Roadside quarry; massive, fine-grained biotite granite; joints 2 m and greater spacing; a few minor pegmatites.

Sample 82-126
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.

Dist./Tp: Kenora
NTS: 52L/2SE
UTM: 317900 m E, 5546000 m N

Description: Massive, pink biotite granite; joints 2 m and greater; sheeting 1 to 3 m.

Sample 82-127
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.

Dist./Tp: Kenora
NTS: 52L/2SE
UTM: 372300 m E, 5545800 m N

Description: Massive, biotite granite; wide spaced joints; similar to 82-125

Sample 82-128*
Commodity: Granite
Colour: Grey
Lithology: Migmatite

Dist./Tp: Kenora
NTS: 52E/15NE
UTM: 376200 m E, 5534500 m N (approx. location)

Description: Gneissic; 1-2 cm layering; fractured due to blasting for road cut south of Minaki.

Sample 82-129
Commodity: Soapstone
Colour: Grey-green
Lithology: —

Dist./Tp: Rainy River/Clayton
NTS: 52F/4SW
UTM: 434100 m E, 5432300 m N

Description: Foliated, soft, chloritic, talcose; altered zone in ultramafic inclusion in granite.

Sample 82-130*
Commodity: Black granite
Colour: Black
Lithology: Gabbro

Dist./Tp: Rainy River/Halkirk
NTS: 52C/11NE
UTM: 495000 m E, 5493800 m N (approx. location)

Description: Medium to coarse grained; massive; many close fractures; some disseminated pyrite.

Sample 82-131
Commodity: Black granite
Colour: Black
Lithology: Same as previous sample.
Dist./Tp: Rainy River/Halkirk
NTS: 52C/11NE
UTM: 496200 m E, 5392400 m N
Description: Rusty weathering gabbro with garnets.

Sample 82-132
Commodity: Granite
Colour: White to light buff
Lithology: Granodiorite
Dist./Tp: Rainy River/Watten
NTS: 52C/11NE
UTM: 493300 m E, 539000 m N
Description: Massive; joints 1 to 2 m apart; biotite granodiorite; trace of pyrite in the joints.

Sample 82-133*
Lithology: Granite
Colour: Pink
Lithology: —
Dist./Tp: Rainy River/Halkirk
NTS: 52C/11NE
UTM: 496700 m E, 5391500 m N
Description: Massive; biotite granite; joints 1 to 2 m apart; sheeting 1 to 2 m; trace of pyrite in joints.

Sample 82-134*
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Rainy River
NTS: 52C/11NE
UTM: 488100 m E, 5388650 m N
Description: Massive; biotite granite with pale blue quartz; joints 1 to 2 m apart.

Sample 82-135
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Rainy River/Watten
NTS: 52C/11NE
UTM: 490200 m E, 5391850 m N
Description: Fine to coarse grained; massive; contains disseminated pyrite and pyrrhotite.

Sample 82-136
Commodity: Decorative stone
Colour: Dark Grey
Lithology: Metavolcanic
Dist./Tp: Rainy River/Watten
NTS: 52C/11NE
UTM: 494100 m E, 5393900 m N
Description: Garnetiferous metavolcanics; up to 25% rounded dark red-brown garnet; forms thin lenses.

Sample 82-137
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Rainy River/Halkirk
NTS: 52C/10NW
UTM: 503400 m E, 5389450 m N
Description: Massive to weakly foliated with inclusions and numerous pink pegmatite and aplite dikes; joints 1 to 2 m.

Sample 82-138
Commodity: Variegated granite
Colour: Green
Lithology: Mylonite
Dist./Tp: Rainy River
NTS: 52C/15SW
UTM: 501650 m E, 5402600 m N
Description: Quetico Fault Zone; strong foliation at 055°/90°; joints 1 m apart; fine-grained green and pink layers 5 to 15 mm; minor pegmatite veins both parallel to and cutting foliation.

Sample 82-139
Commodity: Soapstone
Colour: Grey
Lithology: Metavolcanic
Dist./Tp: Rainy River
NTS: 52C/15SE
UTM: 527000 m E, 5402200 m N
Description: H.H. Wood Talc Co.; chloritic intermediate metavolcanics cut by numerous quartz veins; trace of disseminated pyrite; rock is foliated with minor talcose alteration.

Sample 82-140
Commodity: Soapstone
Colour: Dark green
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: 52C/15SE
UTM: Same as previous sample.
Description: Similar to 82-139, but more talcose.

Sample 82-141
Commodity: Soapstone
Colour: Dark green
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: 52C/15SE
UTM: Same as previous sample.
Description: H.H. Wood Talc Co.; fine-grained chloritic intermediate metavolcanic with slight talcose feel on foliation plane.

Sample 82-142
Commodity: Flagstone
Colour: Dark green
Lithology: Fissile metavolcanic

Dist./Tp: Same as previous sample.
NTS: 52C/15SE
UTM: 527500 m E, 5400600 m N (appprox. location)

Description: Mafic metavolcanics with well developed foliation; splits easily but surface is curved; some red stain due to hematite; minor quartz-carbonate veins; contains traces of pyrite.

Sample 82-143
Commodity: Flagstone
Colour: Dark green
Lithology: Fissile metavolcanic

Dist./Tp: Same as previous sample.
NTS: 52C/15SE
UTM: 527500 m E, 5400600 m N (approx. location)

Description: Similar to 82-142, same location.

Sample 82-144
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Rainy River/Farrington
NTS: 52C/10NW
UTM: 512500 m E, 5398300 m N

Description: Ottertail stock; near contact zone; fractured; variable colour grey to pink.

Sample 82-145
Commodity: Granite
Colour: Grey to white
Lithology: —

Dist./Tp: Rainy River/Halkirk
NTS: 52C/11NE
UTM: 499900 m E, 5392700 m N

Description: Bear Pass granite; 10% biotite; close spaced joints and fractures, variable biotite distribution gives variable colour.

Sample 82-146
Commodity: Crushed granite
Colour: Grey
Lithology: —

Dist./Tp: Rainy River
NTS: 52C/11NW
UTM: 480200 m E, 4389900 m N

Description: Lobstick Island quarry; crushed material.

Sample 82-147
Commodity: Crushed granite
Colour: Grey
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Lobstick Island quarry; rock fractured due to blasting; quarry produced crushed stone for highway and railway construction; variable colour.

Sample 82-148
Commodity: Flagstone
Colour: Dark grey and green
Lithology: Metasediment

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 479750 m E, 5391100 m N

Description: Well foliated but not fissile enough to split well; rock was quarried for highway construction.

Sample 82-149*
Commodity: Variegated granite
Colour: Green
Lithology: Mylonite

Dist./Tp: Same as previous sample.
NTS: 52C/14SE
UTM: 496900 m E, 5402750 m N

Description: Quetico Fault mylonite developed in porphyritic granitoid rock; green matrix with pink feldspar porphyroblasts; sample is hornblende-rich; contains specular hematite.

Sample 82-150
Commodity: n/a
Colour: Dark green
Lithology: Metabasalt

Dist./Tp: Kenora
NTS: 52F/2SE
UTM: —

Description: Fine-grained mafic metavolcanic with fine quartz-carbonate veins; no foliation, but rock is extensively fractured due to blasting in road cut.

Sample 82-150A
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 303200 m E, 5508500 m N

Description: Massive biotite granite; medium grained; joints spaced 3 m apart; contains blue quartz, 10% biotite, minor epidote and a few quartz veins; minor rusty weathering associated with quartz veins.

Sample 82-151
Commodity: n/a
Colour: Dark green
Lithology: Metabasalt

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 304100 m E, 5504600 m N

Description: Silicified brecciated metabasalt; extensive quartz vein development with minor suphides; zone is 15 m wide; basalt occurs in rounded fragments; quartz vein material makes up to 20% of rock.

Sample 82-152
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 306250 m E, 5503350 m N

Description: Massive, medium grained biotite granite; area examined has few joints but adjacent outcrop of similar granite has joints 0.5 to 1 m apart; most are 2 m; mafic inclusions in this area; colour varies from pink to grey.

Sample 82-153
Commodity: Granite
Colour: Grey to pink
Lithology: —

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 306600 m E, 5502550 m N

Description: Massive biotite granite; medium grained; joints usually 2 m apart, but as close as 0.3 m in areas; contains minor veinlets of pink granitoid material.

Sample 82-154
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 310400 m E, 5503400 m N

Description: Massive biotite granite; medium grained; joints 3 m apart; colour pinkish grey; varies over distances of 100 to 200 m.

Sample 82-155
Commodity: Flagstone
Colour: Dark green
Lithology: Metavolcanic

Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 444200 m E, 5518500 m N

Description: Well foliated amphibolite, does not split well.

Sample 82-156
No sample.

Sample 82-157
Commodity: Flagstone
Colour: Black
Lithology: Amphibolite

Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 442900 m E, 5517100 m N (approx. location)

Description: Biotite amphibolite with white leucocratic layers; 0.5 to 1 mm grain size; foliated but does not split well.

Sample 82-158A
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Tustin
NTS: 52F/13SW
UTM: 442100 m E, 5516600 m N

Description: Massive, medium grained biotite granite with abundant pink to red homogeneous pegmatite patches; no foliation; no joints; contains large schlieren and inclusions, some are possibly grey granitoid material. Sample 82-158A was taken from more pegmatitic phase; contains biotite and possible fine grained blue-green apatite.

Sample 82-158B
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52F/13SW
UTM: Same as previous sample.

Description: Same location as 82-158A; sample of medium grained rock.

Sample 82-159
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora
NTS: 52F/13SW
UTM: 441400 m E, 5516000 m N

Description: Similar to 82-158B; contains fewer schlieren but has a weak foliation trending 050°/70°E.

Sample 82-160
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52F/13SW
UTM: 441950 m E, 5513200 m N
Description: Gneissic, biotite-rich layers 1 cm thick grade into massive pink granitoid rock over 1 km.

Sample 82-161
Commodity: Granite
Colour: Deep pink
Lithology: Granite
Dist./Tp: Kenora
NTS: 52F/13SW
UTM: 442700 m E, 5513100 m N
Description: Massive; almost red in colour; has patches of migmatite and pegmatite; no obvious jointing.

Sample 82-162
Commodity: Granite
Colour: Deep pink
Lithology: Granite
Dist./Tp: Kenora
NTS: 52F/13SW
UTM: Same as previous sample.
Description: Same as 82-161 but darker colour.

Sample 82-163
Commodity: Granite
Colour: Deep pink
Lithology: Granite
Dist./Tp: Kenora
NTS: 52F/12NW
UTM: 444000 m E, 5509900 m N
Description: Uniform deep pink colour and medium grain size; contains a few coarse feldspar crystals and pegmatite patches; wide spaced joints.

Sample 82-164
Commodity: Soapstone
Colour: Blue-grey
Lithology: —
Dist./Tp: Kenora/Munross
NTS: 52E/9NW
UTM: 403400 m E, 5497500 m N
Description: Fine grained, soft talcose material; uniform colour, grain size and mineralogy.

Sample 82-165
Commodity: n/a
Colour: Dark green
Lithology: Mafic metavolcanic
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Fine grained, chloritic metabasalt (or metagabbro) with minor disseminated pyrite; unit is adjacent to soapstone unit

Sample 82-166
Commodity: Soapstone
Colour: Dark grey-green
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Soft talcose rock with chlorite and dolomite-ankerite veins; Pipestone Peninsula soapstone quarry; sample was taken from talc-rich zone.

Sample 82-167
Commodity: Soapstone
Colour: Dark grey
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Sample from quarry dump.

Sample 82-168
Commodity: Flagstone
Colour: Green
Lithology: Metavolcanic
Dist./Tp: Kenora
NTS: 52E/9SW
UTM: 409300 m E, 5494200 m N (approx. location)
Description: Sericitic, schistose, felsic metavolcanic; fissile; splits into thin sheets; 5% round quartz phenocrysts; less fissile along strike.

Sample 82-169
Commodity: Flagstone
Colour: Dark grey
Lithology: Metavolcanic
Dist./Tp: Kenora
NTS: 52E/9SW
UTM: 410500 m E, 5493800 m N (approx. location)
Description: Similar to 82-168 but contains talcose material in foliation planes; no quartz phenocrysts; trace of disseminated ankerite; sericitic.

Sample 82-170
Commodity: Flagstone
Colour: Grey-green
Lithology: Felsic metavolcanic
Dist./Tp: Kenora
NTS: 52E/9SW
UTM: 405900 m E, 5494100 m N
Description: Sheared felsic metavolcanics.

Sample 82-171
Commodity: Soapstone
Colour: Dark grey
Lithology: Mafic dike
Dist./Tp: Kenora
NTS: 52E/9SW
UTM: 405900 m E, 5494100 m N
Description: Narrow mafic dike cutting metavolcanics (sample 82-170); foliated the same as the metavolcanics; feels slightly talcose; splits easily.

Sample 82-172
Commodity: Granite
Colour: Pink/brown
Lithology: —
Dist./Tp: Kenora/Jackman
NTS: 52E/16NE
UTM: 424250 m E, 5525400 m N
Description: Massive, fine-grained, biotite granite; close spaced joints (0.3 m); body is 20 to 25 m wide.

Sample 82-173
Commodity: Granite
Colour: Light grey to pinkish brown
Lithology: —
Dist./Tp: Kenora
NTS: 52L/1SW
UTM: 400950 m E, 5544600 m N
Description: Massive, pink biotite granite with pink feldspar phenocrysts; outcrop shows pegmatite dikes and patches; joints are wide spaced.

Sample 82-174
Commodity: Granite
Colour: Light brown
Lithology: Granite
Dist./Tp: Kenora
NTS: 52L/1SW
UTM: 401700 m E, 5546200 m N
Description: Medium to coarse grained; massive; brown feldspar phenocrysts up to 2 cm in white matrix; joints 3 m apart.

Sample 82-175
Commodity: Sand
Colour: Light buff
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52E/16NW
UTM: 399600 m E, 5539100 m N
Description: Quartz-feldspar sand from Redditt gravel pits.

Sample 82-176
Commodity: Sand
Colour: Light buff
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52E/16NW
UTM: 397900 m E, 5535150 m N
Description: Quartz-feldspar sand from Redditt gravel pits.

Sample 82-177
Commodity: Black granite
Colour: Dark green to dark grey
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/11SW
UTM: 477100 m E, 5494200 m N
Description: Mulcahy Lake Sill; fine- to medium-grained gabbro; partly brecciated with quartz veinlets; hornblende forms rims around gabbro fragments; most of outcrop seems to be massive; no foliation; wide spaced joints; contains minor pyrite.

Sample 82-178
Commodity: Black granite
Colour: Dark grey
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52F/11SW
UTM: 476200 m E, 5494600 m N
Description: Layered, medium-grained, anorthositic gabbro; layers 5-10 cm thick are emphasized by varying plagioclase content (weathers white); 1-2 mm grain size; no foliation.

Sample 82-179
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52F/11SW
UTM: 475800 m E, 5494000 m N
Description: Massive, fine- to medium-grained gabbro; no visible sulphide; no obvious joints.

Sample 82-180
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52F/11SW
UTM: 473350 m E, 5490800 m N
Description: Similar to 82-179.

Sample 82-181*
Commodity: Decorative stone
Colour: White
Lithology: Quartz vein
Dist./Tp: Same as previous sample.
NTS: 52F/11SW
UTM: 477400 m E, 5494000 m N
Description: Large white quartz vein with minor pyrite and arsenopyrite; vein has been stripped and trenched; host rock is gabbro.

Sample 82-182
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52F/7SE
UTM: 525400 m E, 5466200 m N
Description: Uniform colour; massive; joints 0.5-1 m; sheeting ~ 0.3 m; epidote in many of the joints; numerous knots and inclusions.

Sample 82-183
Commodity: Black granite
Colour: Dark green
Lithology: Gabbro

Dist./Tp: Same as previous sample.
NTS: 52F/7NE
UTM: 525600 m E, 5474600 m N

Description: Altered gabbro; resembles metavolcanics; cut by many quartz calcite veins; foliated.

Sample 82-184
Commodity: Flagstone
Colour: Dark green
Lithology: Metavolcanic

Dist./Tp: Same as previous sample.
NTS: 52F/7NE
UTM: 525300 m E, 5479600 m N

Description: Foliated, chloritic, intermediate lapilli tuff; all clasts are stretched; contains some carbonate; splits but not as cleanly as slate.

Sample 82-185
Commodity: Granite
Colour: White to light grey
Lithology: —

Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 511800 m E, 5500800 m N

Description: Massive, biotite granite; several close-spaced sets of joints separated by 3 to 6 m; sheeting 1 to 2 m; contains a few pegmatite patches (pegmatite contains muscovite and garnet); minor pyrite in some joints.

Sample 82-186
Commodity: Black granite
Colour: Black
Lithology: Gabbro

Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 505650 m E, 5500150 m N

Description: Nabish Lake gabbro; massive to weakly layered, fine-grained gabbro with minor feldspar phenocrysts; cut by narrow dikes of grey felsite and black mafic rock; outcrops nearby show stronger layering and occasional granitoid veins.

Sample 82-187A
Commodity: Black granite
Colour: Grey
Lithology: Gabbro

Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 505500 m E, 5500700 m N

Description: Massive; coarse grained; contains more feldspar than 82-186; seems to be slightly chloritic and weakly foliated; outcrop cut by a few quartz veins.

Sample 82-187
Commodity: Asbestos
Colour: Dark green
Lithology: Ultramafic rock

Dist./Tp: Kenora/Bridges
NTS: 52F/13NE
UTM: 455200 m E, 5524200 m N

Description: Highly altered with acicular minerals; weathers badly (brown); outcrop is closely fractured.

Sample 82-188
Commodity: Black granite
Colour: Dark grey
Lithology: Gabbro

Dist./Tp: Same as previous sample.
NTS: 52F/13NE
UTM: 455850 m E, 5524250 m N

Description: Fine to medium grained; massive; close-spaced fractures.

Sample 82-189
Commodity: Asbestos
Colour: Dark green
Lithology: Ultramafic rock

Dist./Tp: Same as previous sample.
NTS: 52F/13NE
UTM: 453800 m E, 5523800 m N

Description: Altered; similar to 82-187; contains acicular minerals, but not as much as 82-187; joints 0.3-1 m, most are less than 1 m apart; weathers badly.

Sample 82-190*
Commodity: Pegmatite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52F/13NE
UTM: 452900 m E, 5523600 m N

Description: Feldspar from dump of muscovite prospect in homogeneous pink muscovite - albite - microcline - quartz pegmatite; shows minor microcline graphic granite.

Sample 82-191
Commodity: n/a
Colour: Black
Lithology: Peridotite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Host rock for pegmatite.

Sample 82-192
Commodity: Granite
Colour: Pale green to light grey
Lithology: —
Dist./Tp: Kenora/Glass
NTS: 52E/10SW
UTM: 361250 m E, 5496700 m N
Description: Canoe Lake stock; fine-grained, pyritic, massive quartz-feldspar porphyry; 5 to 10% phenocrysts; up to 1% disseminated pyrite; close spaced fracturing and joints; coarser grained rocks nearby are similar.

Sample 82-193
Commodity: Granite
Colour: Pale green
Lithology: —
Dist./Tp: Kenora/Glass
NTS: 52E/10SW
UTM: 361300 m E, 5496900 m N
Description: Coarser grained and more chloritic than 82-192, but similar.

Sample 82-194
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora/Jackman
NTS: 52E/16SE
UTM: 417200 m E, 5520300 m N
Description: Weakly foliated; up to 20% biotite; joints 2 m apart; contains minor pegmatite.

Sample 82-195
Commodity: Mariposite
Colour: Green
Lithology: —
Dist./Tp: Kenora
NTS: 52K/1SW
UTM: 550500 m E, 5547700 m N
Description: Rainbow quarry.

Sample 82-196
Commodity: Decorative stone
Colour: White
Lithology: Sericitic schist
Dist./Tp: Kenora
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Rainbow quarry; sericitic part of the green quartzite unit.

Sample 82-197
Commodity: Decorative stone
Colour: White
Lithology: Quartzite
Dist./Tp: Kenora
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: White to buff, fine-grained quartzite cut by narrow quartz veins.

Sample 82-198
Commodity: n/a
Colour: Dark grey-green
Lithology: Metasediment
Dist./Tp: Kenora
NTS: 52K/1SW
UTM: 550550 m E, 5547100 m N
Description: Pyritic, fine-grained rock from same horizon as Rainbow quarry, but farther along strike.

Sample 82-199
Commodity: Decorative stone
Colour: Dark green
Lithology: Metaconglomerate
Dist./Tp: Kenora/Drayton
NTS: 52J/4SW
UTM: 576100 m E, 5547100 m N (approx.)
Description: Petara conglomerate cut by fine quartz veins; both clasts and matrix are dark green.

Sample 82-200
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52J/6SW
UTM: 618900 m E, 5574550 m N
Description: Massive, medium-grained, pink granite with blue quartz; contains a few knots; joints 2.5 m apart; extensive overburden in this area.

Sample 82-201
Commodity: Granite
Colour: Pink
Lithology: Tonalite
Dist./Tp: Kenora
NTS: 52J/6SW
UTM: 619250 m E, 5574850 m N
Description: Massive, medium-grained, with blue quartz; contains numerous knots 1 to 5 cm, and rounded inclusions to 10 cm; joints 1 m apart in most of outcrop.

Sample 82-202
Commodity: Variegated granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora
NTS: 52J/6SW
UTM: 610400 m E, 5567700 m N
Description: Gneissic granite; 2 to 20 mm layers with lit par lit pale pink pegmatite.

Sample 82-203
Commodity: n/a
Colour: Dark green
Lithology: Metavolcanic
Dist./Tp: Kenora/Echo
NTS: 52F/16NW
UTM: -
Description: Waste rock from Goldlund mine.

Sample 82-204 *Commodity:* n/a *Colour:* Dark green *Lithology:* Metavolcanic	*Dist./Tp:* Kenora/Code *NTS:* 52E/9SE *UTM:* 413400 m E, 5495650 m N	*Description:* Fine grained, pillowed basalt with minor pyrite in pillow selvedges.
Sample 82-205 *Commodity:* Black granite *Colour:* Black *Lithology:* Gabbro	*Dist./Tp:* Kenora/Code *NTS:* 52E/9SE *UTM:* 413000 m E, 5495800 m N	*Description:* Rusty weathering, fine grained gabbro with minor disseminated pyrite; rock is cut by minor quartz-carbonate veins; close spaced joints (often 10 cm apart); epidote veinlets.
Sample 82-206 *Commodity:* n/a *Colour:* Dark green *Lithology:* Metavolcanic	*Dist./Tp:* Kenora/Code *NTS:* 52E/9SE *UTM:* 412700 m E, 5496000 m N	*Description:* Fine grained, pillowed basalt with minor disseminated pyrite; rusty weathering; closely fractured but does not have a regular fracture orientation.
Sample 82-207 *Commodity:* Granite *Colour:* Red *Lithology:* —	*Dist./Tp:* Kenora *NTS:* 52L/2SW *UTM:* 366300 m E, 5552100 m N	*Description:* Whitedog Falls dam quarry; medium-grained biotite granite; joints 3 m and greater spacing; sheeting 0.5 m; colour varies from pink to red and has some greyish areas; occasional pegmatite patches and schlieren.
Sample 82-208 *Commodity:* Granite *Colour:* Pink *Lithology:* —	*Dist./Tp:* Kenora *NTS:* 52L/2NW *UTM:* 369800 m E, 5558200 m N	*Description:* Medium-grained, biotite granite similar to 82-207; colour is more variable; numerous pink pegmatites and smoky quartz.
Sample 82-209 *Commodity:* Granite *Colour:* Pink *Lithology:* —	*Dist./Tp:* Same as previous sample. *NTS:* 52L/2NW *UTM:* 369800 m E, 5558200 m N	*Description:* Pegmatite from same location as 82-208.
Sample 82-210 *Commodity:* Granite *Colour:* Pink *Lithology:* —	*Dist./Tp:* Same as previous sample. *NTS:* Same as previous sample. *UTM:* Same as previous sample.	*Description:* Crushed material from Whitedog Falls quarry.
Sample 82-211 *Commodity:* Granite *Colour:* Pink *Lithology:* —	*Dist./Tp:* Kenora/Redditt *NTS:* 52E/16NW *UTM:* 402550 m E, 5538200 m N	*Description:* Gnessic granite from Norlicka Minerals prospect; joints vary from 2 to 6 m spacing; colour varies from light to deep pink; sheeting 1 m; medium- to coarse-grained biotite granite; numerous patch pegmatites.
Sample 82-212 *Commodity:* Granite *Colour:* Pink-grey *Lithology:* —	*Dist./Tp:* Kenora/Redditt *NTS:* 52E/16NW *UTM:* 399550 m E, 5536650 m N	*Description:* Medium-grained, biotite granite; massive; minor pegmatite dikes; wide spaced joints; sheeting up to 1 m.

Sample 82-213
Commodity: Crushed granite
Colour: Pink to grey
Lithology: —
Dist./Tp: Kenora/Redditt
NTS: 52E/16NW
UTM: 398100 m E, 5534300 m N
Description: Massive to weakly foliated, pale pink, porphyritic biotite granite is predominant rock type; cut by numerous pegmatite dikes; joints 1 m spacing; sheeting 10 to 15 cm; feldspar phenocrysts to 2 cm; quarried for crushed stone.

Sample 82-214
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52K/4SW
UTM: 431700 m E, 5546750 m N
Description: Massive, porphyritic granite; feldspar phenocrysts to 2 or 3 cm; wide spaced joints; sheeting not visible at this outcrop; a few schlieren are visible.

Sample 82-215
Commodity: Granite
Colour: Brown
Lithology: —
Dist./Tp: Kenora
NTS: 52L/1SW
UTM: 412300 m E, 5540350 m N
Description: Rock-fill quarry near Farlane Station; fine- to medium-grained biotite granite with blue quartz; massive; thin sheeting near surface.

Sample 82-216
Commodity: Granite
Colour: Pink-brown
Lithology: —
Dist./Tp: Kenora
NTS: 52L/1SW
UTM: 413100 m E, 5540400 m N
Description: Farlane quarry; fine-grained biotite granite; massive; wide spaced joints (6 m); a few narrow quartz veins and pegmatite dikes; rock is coarser grained to the south of the quarry and contains a few schlieren.

Sample 82-217
Commodity: Granite
Colour: Red
Lithology: —
Dist./Tp: Kenora
NTS: 52L/2SW
UTM: 366550 m E, 5551950 m N
Description: Whitedog area; granite similar to 82-207; biotite granite with a few large feldspar crystals; minor quartz veins and small pegmatite patches.

Sample 82-218
Commodity: Granite
Colour: Red
Lithology: —
Dist./Tp: Kenora
NTS: 52L/2SW
UTM: 366650 m E, 5551950 m N
Description: Massive; medium grained; joints to 1.5 m spacing; a few biotite knots; exposure is small.

Sample 82-219
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora
NTS: 52E/15NW
UTM: 371600 m E, 5532600 m N
Description: Wade crushed stone quarry; gneissic biotite granite with nebulitic swirls; many pink pegmatitic patches and dikes; sheeting 0.3 to 0.6 m; joints 1 m; many fractures due to blasting.

Sample 82-220
Commodity: Crushed granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Fines from stockpile at 82-219.

Sample 82-221
Commodity: Slate
Colour: Black
Lithology: —
Dist./Tp: Kenora/Willingdon
NTS: 52E/8NE
UTM: 425950 m E, 5475500 m N
Description: Black slate; Highway 71 near Sioux Narrows.

Sample 82-222
Commodity: Slate
Colour: Dark green
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52E/8NE
UTM: 426000 m E, 5475400 m N
Description: 15 m wide slate unit; probably metavolcanic; fissile; splits into thin sheets; minor quartz veins; weathers somewhat rusty.

Sample 82-223
Commodity: Slate
Colour: Dark grey
Lithology: —
Dist./Tp: Kenora/Willingdon
NTS: 52E/8NE
UTM: 426850 m E, 5475950 m N
Description: 12 m units of fine-grained metasediment; very fissile.

Sample 82-224
Commodity: Mariposite
Colour: Green
Lithology: —
Dist./Tp: Kenora
NTS: 52K/1SW
UTM: 550500 m E, 5547700 m N
Description: Green material from Rainbow quarry.

Sample 82-225
Commodity: Flagstone
Colour: Light grey-brown
Lithology: Felsic metavolcanic
Dist./Tp: Kenora/Forgie
NTS: 52E/10NW
UTM: 360000 m E, 5506000 m N
Description: Rush Bay quarry 'ore'.

Sample 83-1
Commodity: Flagstone
Colour: Yellow-green on fresh surface, red hematite stain
Lithology: Rhyolite
Dist./Tp: Kenora/Forgie
NTS: 52E/10 NW
UTM: 360650 m E, 5500850 m N
Description: Well foliated; 5 to 20 cm layering; quartz phenocrysts less than 1 mm in diameter make up to 15% of the rock; splits to 1 cm slabs.

Sample 83-2
Commodity: Flagstone
Colour: Yellow-green
Lithology: Rhyolite
Dist./Tp: Kenora/Forgie
NTS: 52E/10 NW
UTM: 360650 m E, 5500850 m N
Description: Same as 83-1 but shows red hematite stain on surface.

Sample 83-3
Commodity: Slate
Colour: Dark grey
Lithology: Metasediment
Dist./Tp: Kenora/Forgie
NTS: 52E/10 NW
UTM: 360100 m E, 5500300 m N
Description: Unit is about 16 m thick; 10 to 30 cm black graphitic layers; no other bedding visible.

Sample 83-4
Commodity: Slate
Colour: Dark grey
Lithology: Metasediment
Dist./Tp: Kenora/Forgie
NTS: 52E/10 NW
UTM: 360100 m E, 5500300 m N
Description: Same as 83-3 but contains disseminated pyrite.

Sample 83-5
Commodity: Traprock
Colour: Dark green
Lithology: Mafic metavolcanic
Dist./Tp: Kenora/Forgie
NTS: 52E/10 NW
UTM: 359100 m E, 5499900 m N
Description: Carbonatized rock contains 20% (visual estimate) ankerite and minor quartz vein material; recent test pit in outcrop.

Sample 83-6
Commodity: Flagstone
Colour: Green
Lithology: Rhyolite tuff
Dist./Tp: Kenora/Forgie
NTS: 52E/10 NW
UTM: 358400 m E, 5499900 m N
Description: Well foliated; splits relatively cleanly.

Sample 83-7
Commodity: Granite
Colour: Brown
Lithology: Granite
Dist./Tp: Kenora
NTS: 52L/15 SW
UTM: 401700 m E, 5545800 m N (approx. location)
Description: Forgotten Lake area; massive granite from a fresh outcrop.

Sample 83-8
Commodity: Sand
Colour: White to buff
Lithology: —
Dist./Tp: Kenora
NTS: 52E/16 NW
UTM: 399600 m E, 5539000 m N
Description: Redditt 'silica sand' deposit.

Sample 83-9
Commodity: Sand
Colour: Same as previous sample.
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same deposit as 83-8.

Sample 83-10
Commodity: Sand
Colour: Same as previous sample.
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 397900 m E, 5535150 m N
Description: Redditt 'silica sand' deposit.

Sample 83-11
Commodity: Sand
Colour: Same as previous sample.
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same as previous sample.

Sample 83-12
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/11SW
UTM: 473200 m E, 5492000 m N
Description: Mulcahy Lake Sill

Sample 83-13
Commodity: Black Granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 473350 m E, 5490800 m N
Description: Mulcahy Lake Sill, duplicate of 82-180.

Sample 83-14
Commodity: Black granite
Colour: Black
Lithology: Anorthositic gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 476100 m E, 5494500 m N
Description: Mulcahy Lake Sill, layered gabbro.

Sample 83-15
Commodity: Black granite
Colour: Dark green
Lithology: Gabbro
Dist./Tp: Kenora/Satterly
NTS: 52F/10SE
UTM: 533400 m E, 5489050 m N
Description: Massive; medium-grained; cut by many small fractures in addition to the main joint sets and quartz veins.

Sample 83-16
Commodity: Decorative stone
Colour: Dark green
Lithology: Metabasalt
Dist./Tp: Kenora
NTS: 52F10SE
UTM: 534800 m E, 5486750 m N
Description: Silicified metavolcanic breccia; weathers rusty.

Sample 83-17
Commodity: Black granite
Colour: Dark grey
Lithology: Metagabbro
Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 506700 m E, 5500350 m N
Description: Irregular layering; rock looks altered; cut by many fine quartz veinlets.

Sample 83-18
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/11SW
UTM: 473500 m E, 5491100 m N
Description: Mulcahy Lake Sill; fine grained, massive gabbro with fine disseminated pyrite.

Sample 83-19
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/11SW
UTM: 473400 m E, 5490200 m N
Description: Mulcahy Lake Sill; sulphide zone; massive gabbro with disseminated pyrite and pyrrhotite.

Sample 83-20
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/11SW
UTM: 474500 m E, 5493700 m N
Description: Mulcahy Lake Sill; layered zone; sample shows 2-5 cm mineralogical layering.

Sample 83-21
Commodity: Granite
Colour: Light pink
Lithology: Granite
Dist./Tp: Kenora
NTS: 52F/11SE
UTM: 484500 m E, 5491900 m N
Description: Chancellor Lake granite; massive; medium grained.

Sample 83-22
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52F/11SE
UTM: 484500 m E, 5492000 m N
Description: Chancellor Lake granite; massive; medium grained; same texture as 83-21 but colour is deeper.

Sample 83-23 *Commodity:* Sand *Colour:* Buff *Lithology:* —	*Dist./Tp:* Kenora *NTS:* 52L/2NW *UTM:* 369800 m E, 5558100 m N	*Description:* Sand Lake road quarry; sample from overburden.
Sample 83-24 *Commodity:* Flagstone *Colour:* Blue grey to dark green *Lithology:* Intermediate metavolcanic	*Dist./Tp:* Kenora/Forgie *NTS:* 52E/10NW *UTM:* 361400 m E, 5506000 m N	*Description:* Fine grained; probably tuff, but no bedding visible; outcrop to the south of the sample is lapilli tuff; fissile; can be split into 3-5 mm sheets.
Sample 83-25 *Commodity:* Flagstone *Colour:* Dark green *Lithology:* Intermediate metavolcanic	*Dist./Tp:* Kenora/Forgie *NTS:* 52E/10NW *UTM:* 361300 m E, 5505900 m N	*Description:* Fine grained tuff; fissile; can be split to about 1 cm but not as cleanly as 83-24.
Sample 83-26 *Commodity:* Black granite *Colour:* Black to dark grey *Lithology:* Gabbro	*Dist./Tp:* Kenora/Forgie *NTS:* 52E/10NW *UTM:* 357400 m E, 5509200 m N	*Description:* Fine grained; massive; weathers rusty; has close spaced joints.
Sample 83-27* *Commodity:* Black granite *Colour:* Dark grey *Lithology:* Gabbro	*Dist./Tp:* Kenora/Forgie *NTS:* 52E/10NW *UTM:* 357000 m E, 5509200 m N	*Description:* Fine grained; massive; cut by fine quartz veins; weathers rusty; has close spaced joints.
Sample 83-28 *Commodity:* Flagstone *Colour:* Grey-green *Lithology:* Sandstone	*Dist./Tp:* Kenora/Ewart *NTS:* 52E/11NE *UTM:* 351500 m E, 5504600 m N	*Description:* Crowduck metasediments; sample from a greywacke sandstone unit, near a conglomerate unit; fissility varies within the unit from poor to moderate.
Sample 83-29 *Commodity:* Flagstone *Colour:* Dark green *Lithology:* Argillite	*Dist./Tp:* Same as previous sample. *NTS:* Same as previous sample. *UTM:* 351750 m E, 5504650 m N	*Description:* Splits well; shows slight rusty weathering; this location has been quarried.
Sample 83-30 *Commodity:* Flagstone *Colour:* Rusty *Lithology:* Metasediment	*Dist./Tp:* Same as previous sample. *NTS:* Same as previous sample. *UTM:* 351250 m E, 5505200 m N	*Description:* Splits into thin sheets; rusty weathering.
Sample 83-31 *Commodity:* Sand *Colour:* Light buff *Lithology:* —	*Dist./Tp:* Same as previous sample. *NTS:* Same as previous sample. *UTM:* 350900 m E, 5505500 m N	*Description:* Sample from a pit adjacent to Shoal Lake Road.
Sample 83-32 *Commodity:* Flagstone *Colour:* Dark grey *Lithology:* Argillite	*Dist./Tp:* Same as previous sample. *NTS:* Same as previous sample. *UTM:* 351800 m E, 5508700 m N	*Description:* Splits well but bedding is at 20° angle to cleavage; very little of the schistose rock is available.
Sample 83-33 *Commodity:* Flagstone *Colour:* Dark grey *Lithology:* Mafic metavolcanic	*Dist./Tp:* Same as previous sample. *NTS:* Same as previous sample. *UTM:* 350600 m E, 5512200 m N	*Description:* Splits well; rusty stain along foliation; fine grained; contains 3 to 5% (visual estimate) garnet to 2 mm.

Sample 83-34
Commodity: Flagstone
Colour: Light green
Lithology: Felsic metavolcanics
Dist./Tp: Kenora/Gundy
NTS: Same as previous sample.
UTM: 350500 m E, 5512400 m N
Description: Splits well; very fine grained; contains a few quartz eyes.

Sample 83-35
Commodity: 'Marble'
Colour: Dark grey to dark green
Lithology: Calc-silicate gneiss
Dist./Tp: Kenora/Bridges
NTS: 52F/13SE
UTM: 450950 m E, 5520900 m N
Description: 2 to 5 mm layering; rock was probably siliceous metasediment with carbonate lenses or layers and carbonate cement; gneissosity 060°/70°N.

Sample 83-36
Commodity: 'Marble'
Colour: Dark green
Lithology: Calc-silicate gneiss
Dist./Tp: Kenora/Bridges
NTS: 52F/13SE
UTM: 451000 m E, 5520850 m N
Description: 2 to 5 mm layering; rock will split roughly along layering; similar to 83-35.

Sample 83-37
Sample not taken.

Sample 83-38
Sample not taken.

Sample 83-39
Commodity: Granite
Colour: Purple
Lithology: —
Dist./Tp: Kenora
NTS: 52L/1SW
UTM: 401700 m E, 5545550 m N
Description: Massive, medium grained.

Sample 83-40
Commodity: Granite
Colour: Purple
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 401800 m E, 5545550 m N
Description: Massive; weathers pinkish brown.

Sample 83-41
Commodity: Granite
Colour: Pinkish purple
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 401800 m E, 5545600 m N
Description: Massive; more pink than 83-39 and 83-40.

Sample 83-42
Commodity: Black granite
Colour: Dark grey
Lithology: Diorite
Dist./Tp: Kenora/Haycock
NTS: 52E/16SW
UTM: 407400 m E, 5518100 m N
Description: Massive; medium grained (1 to 3 mm); slightly magnetic; trace of disseminated pyrite; does not rust on weathered surface.

Sample 83-43
Commodity: Black granite
Colour: Dark grey
Lithology: Diorite
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same material as 83-42; sample is from broken rock along pipeline.

Sample 83-44*
Commodity: Black granite
Colour: Dark green to black
Lithology: Diabase
Dist./Tp: Kenora/Haycock
NTS: 52E/16SW
UTM: 408100 m E, 5518400 m N
Description: Coarse grained central part of dike.

Sample 83-45*
Commodity: Black granite
Colour: Dark green to black
Lithology: Diabase
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Medium grained zone between central zone and chilled margin; 1 to 3 mm grain size.

Sample 83-46
Commodity: Granite
Colour: Light grey to brown
Lithology: —
Dist./Tp: Rainy River/Rowe
NTS: 52C/13NW
UTM: 427700 m E, 5424100 m N
Description: Medium-grained, biotite granite; colour varies from light to dark grey to brown with pink hematite stained parts.

Sample 83-47
Commodity: Granite
Colour: Brown
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 427300 m E, 5423600 m N
Description: Biotite granite cut by pink granitic dike material with pyrite.

Sample 83-48
Commodity: Granite
Colour: Grey-pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52D/16NE
UTM: 425700 m E, 5423900 m N
Description: Massive biotite granite cut by many pink aplite and granite dikes, contains minor pyrite.

Sample 83-49*
Commodity: Black granite
Colour: Dark purple
Lithology: Gabbro
Dist./Tp: Rainy River/Carpenter
NTS: 52C12NW
UTM: 443900 m E, 5390000 m N
Description: Massive; fine grained; purple tint from the feldspar cut by many close spaced joints; weathers easily.

Sample 83-50
Commodity: Black granite
Colour: Dark grey
Lithology: Diabase
Dist./Tp: Rainy River/Dobie
NTS: 52C/12NW
UTM: 429250 m E, 5391000 m N
Description: From marginal part of dike; fine grained with 2 to 3% feldspar phenocrysts (1.5 mm); trace of disseminated pyrite.

Sample 83-51
Commodity: Black granite
Colour: Dark grey
Lithology: Diabase
Dist./Tp: Rainy River/Dobie
NTS: 52C/12NW
UTM: 430450 m E, 5391900 m N
Description: 0.5 to 1 mm grain size; grain size and texture variable in small outcrop.

Sample 83-52
Commodity: Black granite
Colour: Dark grey
Lithology: Diabase
Dist./Tp: Rainy River/Dobie
NTS: 52C/12NW
UTM: 427900 m E, 5391950 m N
Description: Very fine grained matrix; 5% feldspar phenocrysts up to 5 mm in size.

Sample 83-53
Commodity: Black granite
Colour: Dark grey
Lithology: Diabase
Dist./Tp: Rainy River/Dobie
NTS: 52C/12NW
UTM: 427900 m E, 5391950 m N
Description: Medium to coarse grained; not porphyritic.

Sample 83-54
Commodity: Black granite
Colour: Dark grey
Lithology: Diabase
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Coarse-grained centre of dike.

Sample 83-55
Commodity: Flagstone
Colour: Dark grey
Lithology: Argillite
Dist./Tp: Rainy River/Mather
NTS: 52C/13SW
UTM: 432600 m E, 5404450 m N
Description: 3 m wide zone of fine- to very fine-grained argillite; splits well; bedding 0.5 to 1 cm; almost slate-like; fractures break it into blocks 0.5 m or more in width.

Sample 83-56
Commodity: Variegated granite
Colour: Pink
Lithology: Quetico Fault mylonite
Dist./Tp: Rainy River/Dance
NTS: 52C/13SE
UTM: 450750 m E, 5404650 m N
Description: Layering 1 cm or less; cut by fine pink veinlets; in places splits into 8 cm slabs.

Sample 83-57
Commodity: Variegated granite
Colour: Grey-pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Predominantly pink in colour; 0.5-2 cm layering; mafic minerals make up about 40% of the rock.

Sample 83-58
Commodity: Variegated granite
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 450800 m E, 5404700 m N
Description: Similar to 83-57 but predominantly mafic.

Sample 83-59
Commodity: Black granite
Colour: Dark grey to black
Lithology: Diabase
Dist./Tp: Rainy River
NTS: 52C/13SE
UTM: 453700 m E, 5411650 m N
Description: Fine grained; uniform texture; magnetic; joints 20-50 cm apart; dike is 3 m in width.

Sample 83-60
Commodity: Talc/soapstone
Colour: Dark green
Lithology: Altered ultramafic
Dist./Tp: Rainy River/Claxton
NTS: 52F/4SW
UTM: 433600 m E, 5430800 m N
Description: Inclusion of altered ultramafic rock in granitoid migmatite; soft; talcose.

Sample 83-61
Commodity: Talc/soapstone
Colour: Dark green
Lithology: Altered ultramafic
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 433950 m E, 5431950 m N
Description: Chlorite-biotite rich material; Claxton Township talc occurrence.

Sample 83-62
Commodity: Talc/soapstone
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 434100 m E, 5432300 m N
Description: Talc-rich lens at Claxton Township talc occurrence.

Sample 83-63
Commodity: Black granite
Colour: Dark grey to black
Lithology: Gabbro
Dist./Tp: Kenora/Tweedsmuir
NTS: 52F/5SW
UTM: 427450 m E, 5462500 m N
Description: Massive; fine to medium grained; joints spaced 0.3 to 0.6 m.

Sample 83-64
Commodity: Talc
Colour: Dark green
Lithology: Altered gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Talcose shear zone 1 m wide; contains up to 2% pyrite.

Sample 83-65
Commodity: Talc
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same as 83-64.

Sample 83-66*
Commodity: Black granite
Colour: Dark green
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52E/8SE
UTM: 427200 m E, 5462250 m N
Description: Massive; medium grained; colour changes as grain size increases; trace of disseminated pyrite; calcite veinlets fill joints.

Sample 83-67*
Commodity: Black granite
Colour: Dark green
Lithology: Diabase
Dist./Tp: Kenora/Work
NTS: 52E/9SE
UTM: 423100 m E, 5490000 m N (approx. location)
Description: Sample from coarse grained, central part of dike; parts of dike are porphyritic; joints 1 m apart filled with epidote.

Sample 83-68
Commodity: Variegated granite
Colour: Pink and grey
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Small amount of evenly layered gneiss; gneissic layering becomes indistinct over a short distance.

Sample 83-69
Commodity: Black granite
Colour: Dark green
Lithology: Diabase
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 422400 m E, 5491300 m N (approx. location)
Description: Coarse-grained, similar to 83-67.

Sample 83-70
Commodity: Flagstone
Colour: Dark grey
Lithology: Metasandstone
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 422350 m E, 5494850 m N
Description: Can be split into thin (6 mm) sheets; contains thin biotite layers; colour varies from light grey with black biotite layers to dark grey; rusty brown colour on foliation surface.

Sample 83-71
Commodity: Black granite
Colour: Blue grey
Lithology: Gabbroic anorthosite
Dist./Tp: Rainy River
NTS: 52C/10NW
UTM: 505200 m E, 5387350 m N
Description: Porphyritic; massive; rounded feldspar phenocrysts 2 to 5 cm make up 15 to 20% of rock; matrix is dark grey, phenocrysts light green-grey; colour and texture are uniform.

Sample 83-72
Commodity: Soapstone
Colour: Silver grey
Lithology: Sheared anorthosite
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 507000 m E, 5388400 m N
Description: 3 m wide shear zone in anorthosite; rock is very soft and very fissile.

Sample 83-73
Commodity: Black granite
Colour: Blue grey
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 507400 m E, 5388000 m N
Description: Anorthosite breccia; all phenocrysts are broken into small pieces; matrix is chloritic; contains a few dark green chloritic intrusions.

Sample 83-74
Commodity: n/a
Colour: Dark grey
Lithology: Metasediment
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 507500 m E, 5386600 m N
Description: Very fine grained, schistose, fissile rock; low carbonate content; weathers rusty.

Sample 83-75
Commodity: Marble
Colour: Dark grey
Lithology: Metasediment
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 507550 m E, 5386750 m N
Description: Similar to 83-74 but has a higher carbonate content; outcrop is cut by minor white calcite veinlets.

Sample 83-76
Commodity: Pebbles
Colour: Dark grey
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 509900 m E, 5387400 m N
Description: Shingle beach derived from carbonate unit; pebbles well rounded.

Sample 83-77
Commodity: n/a
Colour: Grey
Lithology: Metasediment
Dist./Tp: Rainy River
NTS: 52C/11NE
UTM: 489500 m E, 5389300 m N
Description: Fine grained, rusty weathering siliceous metasediment; minor unit intercalated with clastic metasediments.

Sample 83-78
Commodity: Variegated granite
Colour: Pink
Lithology: —
Dist./Tp: Rainy/River
NTS: 52C/15SW
UTM: 513400 m E, 5406150 m N
Description: Gneissic; even layering but outcrop is cut by aplite and lit par lit pegmatite; layering is 2 to 20 mm; approximately 40% of the material is melanocratic.

Sample 83-79
Commodity: Variegated
Colour: Grey
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Gneissic; same material as 83-78 but grey in colour.

Sample 83-80
Commodity: Black granite
Colour: Dark grey
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52C/10NW
UTM: 502400 m E, 5390500 m N
Description: Fine-grained matrix, with blade-like crystals of calcite pseudomorphic after plagioclase; sample from loose drill core.

Sample 83-81
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Fine-grained, magnetic gabbro; sample from loose drill core.

Sample 83-82
Commodity: Black granite
Colour: Dark grey
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 502900 m E, 5389800 m N
Description: Massive to weakly foliated; contains disseminated pyrite; looks fresh but has minor rusty stain on fracture surfaces.

Sample 83-83
Commodity: Black granite
Colour: Dark grey
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 502950 m E, 5389150 m N
Description: Similar to 83-82 but coarser grained.

Sample 83-84
Commodity: Decorative stone
Colour: Dark grey
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 503600 m E, 5389900 m N
Description: Medium to coarse grained with many close fractures and magnetite seams.

Sample 83-85*
Commodity: Decorative stone
Colour: Grey
Lithology: Magnetite ilmenite rock
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Weathers rusty; silver grey in colour with a metallic luster.

Sample 83-86
Commodity: Soapstone
Colour: Dark green
Lithology: Chlorite schist
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 512600 m E, 5388350 m N
Description: Very soft; strongly foliated; very fissile with carbonate in foliation and carbonate veinlets.

Sample 83-87*
Commodity: Variegated granite
Colour: Pink
Lithology: Biotite gneiss
Dist./Tp: Kenora/Gundy
NTS: 52E/14SE
UTM: 351600 m E, 5514700 m N
Description: Fine grained, nebulitic texture with lit par lit pegmatite; gneissosity trends approximately 095°; joints are 1 to 2 m apart, oriented 030°/90° and 095°/90°; sheeting 1-2 m.

Sample 83-88*
Commodity: Variegated granite
Colour: Pink
Lithology: Biotite gneiss
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 352800 m E, 5515000 m N
Description: Similar to 83-87, but contains more pegmatite and aplite; a few joints trend 050°/90°, 110°/90°, 140°/90°.

Sample 83-89
Commodity: Granite
Colour: Pink
Lithology: Biotite granite

Dist./Tp: Kenora
NTS: 52F/12NW
UTM: 437200 m E, 5500650 m N

Description: Massive; uniform texture; 2-5 mm grain size; rare feldspar megacrysts to 8 mm; 3 to 5% biotite; major joint direction 020-025°/90° at 6 m spacing; also wide spaced joint set 120°/90°.

Sample 83-90
Commodity: Variegated granite
Colour: Pink
Lithology: Biotite granite

Dist./Tp: Kenora
NTS: 52F/12NW
UTM: 438000 m E, 5499700 m N

Description: Nebulitic, pink and grey granitoid material with large knots; texture is large scale; biotite schlieren are several metres in diameter; pink pegmatite patches and narrow dikes are common, spaced about 2 m apart; joints are wide spaced, oriented 130°/90° and 040°/90°.

Sample 83-91
Commodity: Granite
Colour: Pink
Lithology: Granite - quartz monzonite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 438350 m E, 5499550 m N

Description: Similar to 83-89, but lighter in colour; joints 155°/90° and 040°/90° are wide spaced; sheeting is 2 m.

Sample 83-92
Commodity: Granite
Colour: Pink
Lithology: Biotite granite

Dist./Tp: Same as previous sample.
NTS: 52L/2NE
UTM: 375500 m E, 5557600 m N

Description: Massive; 3 to 5% biotite; grain size varies from coarse equigranular to pegmatitic; rare minor quartz veins; joints are wide spaced 040° to 050°; sheeting is 2 m or more.

Sample 83-93
Commodity: Variegated granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52L/2NE
UTM: 376700 m E, 5558900 m N (approx. location)

Description: Gneissosity trends 250° to 270°; some areas are evenly layered; joints are wide spaced.

Sample 83-95
Commodity: Granite
Colour: Brown
Lithology: Granite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 377300 m E, 5558100 m N

Description: Massive; exposure is small, with inclusions; joints are 140°/90°, 3 m apart; they show up in the next outcrop where similar but slightly lighter material is found.

Sample 83-96
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52K/4SW
UTM: 435000 m E, 5542100 m N

Description: Massive; pink; medium to coarse grained; equigranular; uniform colour; wide spaced joints trending 080°/90°; in one part of outcrop schlieren trend 050°; nearby outcrops show textural variations.

Sample 83-97
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52K/4SW
UTM: 432000 m E, 5548000 m N

Description: Rock is grey with feldspar megacrysts; joints are 3 to 8 m apart; colour and texture are uniform.

Sample 83-98
Commodity: Soapstone
Colour: Dark grey
Lithology: Metavolcanic

Dist./Tp: Same as previous sample.
NTS: 52E/7NE
UTM: 376650 m E, 5475500 m N

Description: Coste Island deposit.

Sample 83-99
Commodity: Soapstone
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 376500 m E, 5475500 m N
Description: Coste Island deposit.

Sample 83-100A
Commodity: Soapstone
Colour: Grey-green
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: 52E/7SW
UTM: 370900 m E, 5465300 m N (approx. location)
Description: Mica Point deposit; magnetic; soft; fine grained.

Sample 83-100B
Commodity: Soapstone
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same as previous sample.

Sample 83-101
Commodity: Flagstone
Colour: Grey
Lithology: Metavolcanic
Dist./Tp: Kenora
NTS: 52E/7SW
UTM: 367850 m E, 5465750 m N
Description: Sulphide bearing; weathers rusty; fissile.

Sample 83-102
Commodity: Flagstone
Colour: Silver on surface
Lithology: Rhyolite
Dist./Tp: Kenora
NTS: 52E/7NE, 52E/8NW, 52E/9SW
UTM: —
Description: Fissile; sample is typical material exposed along the north shore of Cliff Island.

Sample 83-103
Commodity: Mariposite
Colour: Green
Lithology: Metavolcanic
Dist./Tp: Kenora
NTS: 52E/10NE
UTM: 383700 m E, 5501500 m N
Description: Northern Peninsula deposit; bright green, well foliated, carbonatized metavolcanics; rusty brown weathering; cut by quartz-carbonate veins.

Sample 83-104
Commodity: Flagstone
Colour: Dark grey
Lithology: Metavolcanic
Dist./Tp: Kenora
NTS: 52E/10NE
UTM: 375800 m E, 5508550 m N
Description: Original rock was lapilli tuff; well-developed foliation at 080°/80°N; splits but not into thin slabs.

Sample 83-105
Commodity: Flagstone
Colour: Dark grey
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: 52E/10NW
UTM: 374300 m E, 5508400 m N
Description: Fine tuff or volcanogenic sediment; splits more easily than 83-104; in places it is fissile; gold-coloured biotite occurs in the foliation planes.

Sample 83-106
Commodity: Granite
Colour: Grey
Lithology: Granodiorite
Dist./Tp: Same as previous sample.
NTS: 52E/10NW
UTM: 369400 m E, 5508750 m N
Description: Weakly foliated at 045-060°/90°; contains 10 cm knots but texture is uniform; overall colour is blue-grey but feldspars are pinkish; sheeting is 0.5 to 1 m at surface; joints are spaced at 2 m and trend 045°/80°S and 130°/90°.

Sample 83-107
Commodity: Granite
Colour: Deep pink
Lithology: Biotite granite
Dist./Tp: Kenora
NTS: 52L/1SE
UTM: 414700 m E, 5549500 m N
Description: Massive to weakly foliated megacrystic granitic rock; preferred orientation of megacrysts (foliation) is 070°; joints oriented 060°/90° and 160°/90°, spaced 5 to 10 m apart in most of outcrop.

Sample 83-108
Commodity: Granite
Colour: Purple brown
Lithology: Biotite granite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 414600 m E, 5548950 m N

Description: Massive; similar in texture and jointing to 83-107.

Sample 83-109*
Commodity: Black granite
Colour: Black to dark green
Lithology: Metapyroxenite

Dist./Tp: Kenora/Lemay
NTS: 52E/9NE
UTM: 419900 m E, 5498800 m N

Description: Massive; grain size varies from 2-3 mm to >1 cm over short distances; contains fine disseminated pyrite; joints oriented at 112°/90° are 0.5 to 1 m apart; sheeting is variable up to 1 m; surface rusts slightly due to pyrite; outcrop is cut by pink pegmatite dikes and narrow tourmaline-rich veinlets.

Sample 83-110
Commodity: Soapstone
Colour: Dark green
Lithology: Talc schist

Dist./Tp: Kenora/Lemay
NTS: 52E/9NE
UTM: 419900 m E, 5498800 m N

Description: Soft talcose material from a narrow (0.3 m) shear zone in same outcrop as 83-109.

Sample 83-111
Commodity: Black granite
Colour: Black to dark green
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Coarse pyroxenite; 1 to 2 cm grain size; similar to 83-109.

Sample 83-112
Commodity: Soapstone
Colour: Dark green
Lithology: Mica schist

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: 1 to 5 cm vein of soft talcose feeling material; hosted in granodiorite; vein trends 075°.

Sample 83-113*
Commodity: Granite
Colour: Pink
Lithology: Biotite granite

Dist./Tp: Same as previous sample.
NTS: 52E/9NE
UTM: 414300 m E, 5500500 m N

Description: Massive to weakly foliated; foliation due to biotite trends 070°/65°N; joints trend 000-355°/90°, 050°/90° and 120°/90° and are spaced 1 to 2 m apart.

Sample 83-114*
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 413500 m E, 5499700 m N

Description: Massive, pink, medium-grained, biotite granite; joints trend 020°/90°, 140°/70-80°S and 160°/60°N and are spaced 1 to 2 m; sheeting varies from <1 to 2 m.

Sample 83-115
Commodity: Granite
Colour: Deep pink
Lithology: —

Dist./Tp: Kenora
NTS: 52F/13SW
UTM: 442800 m E, 5512400 m N

Description: The granite is massive, with uniform colour and grain size; joints are wide spaced (5 m); sheeting is 2 m and thicker.

Sample 83-116
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 443200 m E, 5512000 m N

Description: Granite is similar to 83-115; joints are wide spaced, trending 150°; sheeting is 2 m; a 2 m wide fine-grained phase trends 150°, and may be a later intrusive phase although sharp contacts were not seen.

Sample 83-117
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 442800 m E, 5513000 m N

Description: Massive; pink; uniform fine to medium grained; wide spaced joints; 2-3 m sheets.

Sample 83-118
Commodity: Granite
Colour: Deep pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 440900 m E, 5512000 m N
Description: Massive; similar to 82-161; thick sheets; wide spaced joints (>2 m); minor patch pegmatites.

Sample 83-119
Commodity: Granite
Colour: Pale pink
Lithology: —
Dist./Tp: Kenora/Laval
NTS: 52F/16SW
UTM: 539000 m E, 5525000 m N (approx. location)
Description: Massive; contains 3% biotite and several 5 to 20 cm knots; outcrop is small, cut by a narrow pink aplite dike; joints are not visible due to small size of outcrop; granite body is poorly exposed.

Sample 83-120
Commodity: Variegated granite
Colour: Pale pink
Lithology: —
Dist./Tp: Kenora/Webb
NTS: 52F/16NW
UTM: 537550 m E, 5532250 m N
Description: Biotite has segregated into discrete layers that dip shallowly to the north; joints trend 100° and are spaced about 1 m apart; sheeting is thin and parallel to the foliation; granite is poorly exposed.

Sample 83-121A
Commodity: Variegated granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Rowell
NTS: 52F/15NW
UTM: 512500 m E, 5537850 m N
Description: Richan Station quarry; rock is grey with pink leucocratic layers; layering is swirly-nebulitic with most swirls being a metre or more in diameter; layers are 4 to 10 mm thick; wide spaced joints trend 120° and 040°; sheeting is less than 1 m.

Sample 83-121
Commodity: Slate
Colour: Black
Lithology: Metasediment
Dist./Tp: Kenora
NTS: 52E/10NE
UTM: 383100 m E, 5501500 m N (approx. location)
Description: True slate from old drill core.

Sample 83-122
Commodity: Slate-mariposite
Colour: Olive
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Sample from old drill core.

Sample 83-123
Commodity: Flagstone
Colour: Light green
Lithology: Rhyolite
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Fine-grained felsic tuff; splits to 1 cm slabs.

Sample 83-124
Commodity: Black granite
Colour: Black
Lithology: Gabbro
Dist./Tp: Kenora
NTS: 52F/11NW
UTM: 476300 m E, 5495000 m N (approx. location)
Description: Equigranular; 2 to 4 mm grain size; massive; joints are 1 m spaced; sheeting is 2 m spaced; contains minor disseminated pyrite; both the sulphides and the rock weather rusty.

Sample 83-125
Commodity: Decorative stone
Colour: Grey
Lithology: Tuff
Dist./Tp: Kenora
NTS: 52F/11NW
UTM: 476900 m E, 5501650 m N
Description: Intermediate to felsic lapilli tuff.

Sample 83-126
Commodity: Decorative stone
Colour: Grey
Lithology: Metavolcanic
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Massive andesite flow.

Sample 83-127
Commodity: Granite
Colour: Light beige
Lithology: —
Dist./Tp: Kenora/Avery
NTS: 52F/9NW
UTM: 549900 m E, 5498700 m N
Description: Massive, biotite-hornblende granite; joints trend 060° and 100°, spaced 1 to 2 m; sheeting is 0.3 to 0.6 m and thinner.

Sample 83-128
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 549200 m E, 5498300 m N
Description: Uniform colour; joints are spaced 1 to 2 m; sheeting is thin.

Sample 83-129
Commodity: Granite
Colour: Light Grey
Lithology: —
Dist./Tp: Kenora
NTS: 52F/8NE
UTM: 557000 m E, 5473500 m N (approx. location)
Description: Revell Batholith; fine to medium grained; 10% biotite; close spaced joints 100°, 060° and 000°; outcrop is cut by five aplite veins.

Sample 83-130
Commodity: Mariposite
Colour: Dark grey
Lithology: Altered gabbro
Dist./Tp: Kenora
NTS: 52F/8NW
UTM: 544600 m E, 5479750 m N
Description: Carbonatized gabbro; fine to medium grained; joints 140° and 050°, spaced 1 m apart; outcrop is cut by quartz-carbonate veins.

Sample 83-131
Commodity: Mariposite
Colour: Grey green
Lithology: Altered gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 544550 m E, 5479800 m N
Description: Ankerite-bearing carbonatized gabbro; weathers rusty brown colour; cut by extensive quartz-carbonate veins.

Sample 83-132
Commodity: Mariposite
Colour: Green
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Rock is predominantly quartz-carbonate vein material; contains up to 5% disseminated euhedral pyrite up to 6 mm wide.

Sample 83-133
Commodity: Mariposite
Colour: Green
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Pyrite-rich sample of same material as 83-132.

Sample 83-134
Commodity: Mariposite
Colour: Dark green
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 544400 m E, 5479900 m N
Description: Slightly altered gabbro; fine grained; rusty brown weathered surface; highly fractured; cut by fine carbonate veinlets.

Sample 83-135
Commodity: Carbonate
Colour: Light green
Lithology: Carbonate metasediment
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 544000 m E, 5480200 m N
Description: Very fine grained; massive; narrow, poorly exposed unit.

Sample 83-136
Commodity: 'Marble'
Colour: Buff
Lithology: Carbonatized quartz porphyry dike
Dist./Tp: Same as previous sample.
NTS: 52F/9SW
UTM: 544200 m E, 5483650 m N
Description: Deeply weathered, highly friable dike; trends 110-120°; strong foliation trending 120°; no potential as dimension stone.

Sample 83-137
Commodity: 'Marble'
Colour: Green
Lithology: Carbonatized basalt
Dist./Tp: Kenora/Satterly
NTS: 52F/9SW
UTM: 544250 m E, 5495400 m N
Description: Massive; highly carbonatized; 1 cm thick brick red weathered rind.

Sample 83-138
Commodity: Soapstone
Colour: Dark green
Lithology: Serpentinite
Dist./Tp: Kenora/Heyson
NTS: 52N/4SW
UTM: 444500 m E, 5650900 m N
Description: Fine to medium grained; massive; carbonatized; contains fine white-weathering veinlets.

Sample 83-139
Commodity: Soapstone
Colour: Dark green
Lithology: Serpentinite
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Material similar to 83-139 but from an old pit.

Sample 83-140
Commodity: Sand
Colour: Light buff
Lithology: —
Dist./Tp: Kenora
NTS: 52N/4NE
UTM: 451200 m E, 5665300 m N
Description: Grab sample from a stock pile in a pit on the Nungasser Road.

Sample 83-141*
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52N/4NE
UTM: 457300 m E, 5672000 m N
Description: Massive; medium grained; biotite content varies from very little to 5%; joints trend 080-100° and 170° and are spaced 2 to 3 m apart; sheeting is 2 m at the surface.

Sample 83-142
Commodity: Marble
Colour: Buff
Lithology: Crystalline carbonate metasediment
Dist./Tp: Kenora/Todd
NTS: 52M/1SE
UTM: 419700 m E, 5654150 m N
Description: Fine grained; buff-pink colour with dark green streaks; sample shows rusty stains from weathering along cracks and around the edges; buff colour may be due to weathering rather than the natural colour of rock.

Sample 83-143
Commodity: Marble
Colour: Light grey
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: White calcite rock with smoky grey siliceous layers; contains a trace of pyrite that follows the layering.

Sample 83-144
Commodity: Marble
Colour: Light grey
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 419500 m E, 5654200 m N
Description: Massive carbonate as in 83-143; intercalated with rusty weathering siliceous metasediments.

Sample 83-145
Commodity: Marble
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Cherty metasediments intercalated with marble.

Sample 83-146
Commodity: Marble
Colour: Light grey
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 419250 m E, 5653950 m N
Description: Layered carbonate similar to 83-143; often with rusty weathering.

Sample 83-147
Commodity: Soapstone
Colour: Dark blue green
Lithology: Serpentinized ultramafic rock
Dist./Tp: Kenora/Fairlie
NTS: Same as previous sample.
UTM: 429850 m E, 5654300 m N
Description: Massive fine grained with a trace of disseminated pyrite; cut by many narrow calcite and asbestos veinlets; contains minor cross fibre asbestiform minerals.

Sample 83-148
Commodity: Soapstone
Colour: Dark green
Lithology: Talc-chlorite schist

Dist./Tp: Same as previous sample.
NTS: 52N/4SW
UTM: 433300 m E, 5653100 m N

Description: Fine to medium grained; well foliated (090°); altered ultramafic rock in contact with gabbro; talcose material is restricted to the foliated rock and is cut by irregular carbonate veins.

Sample 83-149
Commodity: Soapstone
Colour: Dark green
Lithology: Serpentinite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 434700 m E, 5652600 m N

Description: Massive; fine grained; cut by fine white to dark red calcite veinlets.

Sample 83-150
Commodity: Soapstone
Colour: Dark green
Lithology: Serpentinite

Dist./Tp: Kenora/Heyson
NTS: 52N/4SW
UTM: 437300 m E, 5651700 m N

Description: Weakly foliated; cut by carbonate and asbestiform mineral veinlets; sheeting 1 to 2 m.

Sample 83-151
Commodity: Soapstone
Colour: Dark green
Lithology: Serpentinite

Dist./Tp: Same as previous sample.
NTS: 52N/4SW
UTM: 437900 m E, 5651450 m N

Description: Massive serpentinite with abundant carbonate veinlets; crumbles easily.

Sample 83-152
Commodity: Black granite
Colour: Dark grey
Lithology: Gabbro

Dist./Tp: Same as previous sample.
NTS: 52K/13NW
UTM: 436900 m E, 5646100 m N

Description: Fine to medium grained; weakly foliated porphyritic; contains a trace of disseminated pyrite which gives localized rusty weathering; feldspar phenocrysts form a turkey-track texture; outcrop is cut by a narrow aplite dike.

Sample 83-153
Commodity: 'Marble'
Colour: Dark green to black
Lithology: Serpentinite

Dist./Tp: Kenora/Dome
NTS: 52N/4SW
UTM: 445850 m E, 5661200 m N

Description: Massive; fine grained; cut by minor white calcite veinlets; joints trending 040°, 146° and 170° are spaced 1 m; rock appears to be resistant to weathering.

Sample 83-154
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Kenora
NTS: 52K/14NE
UTM: 499200 m E, 5646600 m N

Description: Weakly foliated at 090°/90°; 1 to 2 m spaced joints oriented 040° and 150°; outcrop is cut by narrow pegmatites and quartz veins and shows several small knots; the granite body is variable in colour over 200 m.

Sample 83-155
Commodity: Flagstone
Colour: Dark green
Lithology: Pillowed metabasalt

Dist./Tp: Kenora/Pickerel
NTS: 52F/16NE
UTM: 553950 m E, 5530600 m N

Description: Well foliated; foliation trends 070°/75°N; foliation is wavy due to the pillows; only a small amount of this rock splits to 1 cm slabs; outcrop is cut by a felsic porphyry dike subparallel to the foliation; contains minor sulphide mineralization.

Sample 83-156
Commodity: Flagstone
Colour: Dark green
Lithology: Pillowed metabasalt

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Same as above but does not split.

Sample 83-157
Commodity: Flagstone
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same as above but sulphide-bearing.

Sample 83-158
Commodity: Flagstone
Colour: Dark green
Lithology: Basalt
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 554900 m E, 5531500 m N
Description: Massive porphyritic basalt; trace of disseminated pyrite; 5% feldspar phenocrysts 0.5 cm in diameter; can be split into 1 cm sheets but often splits across the foliation; foliation trends 065°/75°W; outcrop is cut by quartz veins.

Sample 83-159
Commodity: Flagstone
Colour: Dark green
Lithology: Basalt
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 555100 m E, 5531700 m N
Description: Well foliated at 070°/80°W; contains disseminated pyrite and chalcopyrite; outcrop is cut by felsic porphyry and quartz veins; splits well.

Sample 83-160
Commodity: Flagstone
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Same as 83-159 but contains sulphide minerals.

Sample 83-161
Commodity: Flagstone
Colour: Light green
Lithology: Intermediate to felsic metavolcanic
Dist./Tp: Kenora/Pickerel
NTS: Same as previous sample.
UTM: 556300 m E, 5532400 m N
Description: Fissile but foliation surface is curved.

Sample 83-162
Commodity: Flagstone
Colour: Dark green
Lithology: Mafic metavolcanic
Dist./Tp: Kenora/Pickerel
NTS: Same as previous sample.
UTM: 557100 m E, 5533200 m N
Description: Fissile; splits into 1 cm sheets.

Sample 83-163
Commodity: Flagstone
Colour: Light green
Lithology: Quartz porphyry dike
Dist./Tp: Kenora/Pickerel
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Fissile; splits into 0.5 to 1 cm sheets with hard surfaces; weathers white.

Sample 83-164
Commodity: Slate
Colour: Dark grey
Lithology: Meta-argillite
Dist./Tp: Kenora/Jordan
NTS: 52K/1SE
UTM: 567200 m E, 5540200 m N
Description: True slate intercalated with dark greywacke; width of units not exposed; foliation/bedding trends 060°/80°S.

Sample 83-165
Commodity: Flagstone
Colour: Dark grey
Lithology: Metasandstone
Dist./Tp: Kenora/GTP Block 10
NTS: 52J/4SW
UTM: 585000 m E, 5550900 m N
Description: Lens-shaped units of sandstone intercalated with conglomerate; mica layers give a good parting; splits into thin sheets; foliation trends 098°/78°N.

Sample 83-166*
Commodity: Granite
Colour: Deep pink
Lithology: —
Dist./Tp: Kenora
NTS: 52J/5SW
UTM: 572400 m E, 5572700 m N
Description: Fine-grained, massive, biotite granite; biotite makes up 3%; wide spaced joints trend 040°; occasional quartz veins and minor pegmatite.

Sample 83-167
Commodity: Flagstone
Colour: Green
Lithology: Quartz porphyry dike
Dist./Tp: Kenora/ Pickerel
NTS: 52K/16NE
UTM: 556500 m E, 5532800 m N
Description: Dike trends 070°; does not split as well as 83-163 but otherwise similar.

Sample 83-167A
Commodity: Slate
Colour: Dark grey
Lithology: Meta-argillite
Dist./Tp: Kenora/Ewart
NTS: 52E/11NE
UTM: 351300 m E, 5507900 m N
Description: Poorly exposed; rock is friable; foliation surface is wavy; weathers rusty; foliation trends 090-105°/085°S.

Sample 83-168
Commodity: Slate
Colour: Dark grey
Lithology: Meta-argillite
Dist./Tp: Kenora/Ewart
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Sample from old diamond drill core dumped near 83-167A; contains pyrite nodules.

Sample 83-169
Commodity: Flagstone
Colour: Grey
Lithology: Felsite
Dist./Tp: Kenora/Ewart
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Fissile felsite from core as above.

Sample 83-170
Commodity: Black granite
Colour: Dark green-grey
Lithology: Diabase
Dist./Tp: Kenora
NTS: 52E/10NE
UTM: 375600 m E, 5508600 m N
Description: Narrow (0.3 to 1 m) dikes and sills injected along the foliation of the host (070°); contains trace of disseminated pyrite and minor epidote in fractures; host is well foliated but not fissile.

Sample 83-171
Commodity: Flagstone
Colour: Black
Lithology: Amphibolite
Dist./Tp: Kenora
NTS: 52E/10N
UTM: 378800 m E, 5510800 m N
Description: Material splits but not thinly enough for flagstone; foliation trends 065°/085°N; rock is strongly magnetic; contains a trace of disseminated pyrite and weathers rusty.

Sample 83-172
Commodity: 'Marble'
Colour: Dark green
Lithology: Ultramafic?
Dist./Tp: Kenora
NTS: 52E/15SE
UTM: 381900 m E, 5511900 m N
Description: Massive ultramafic rock with rare calcite and asbestiform mineral veinlets up to 2 cm wide; sheeting 0.5 to 1 m; rock is cut by a 6 m wide shear zone trending 015°/85°N.

Sample 83-173
Commodity: Asbestos
Colour: Light green
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Vein filling material from 83-172.

Sample 83-174
Commodity: Variegated granite
Colour: Pink
Lithology: Granite
Dist./Tp: Kenora
NTS: Same as previous sample.
UTM: 382200 m E, 5512700 m N
Description: Gneissosity trends 090°/85°; layering is 3-10 mm; wide spaced joints trend 010°.

Sample 83-175
Commodity: Black granite
Colour: Dark green
Lithology: Gabbro
Dist./Tp: Kenora/Phillips
NTS: 52F/4NW
UTM: 428350 m E, 5451500 m N
Description: Fine grained, massive gabbro; close spaced joints trend 045°/70°N, 115°/70°S and 155°/85°W; sheeting 1-2 m; joints are filled with calcite; rock is cut by calcite veinlets.

Sample 83-176
Commodity: Soapstone
Colour: Dark green
Lithology: Altered gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 427950 m E, 5452400 m N
Description: Foliated 150°/90°; soft; foliated to varying degrees; the most foliated material is the softest; magnetic; slight rusty weathering.

Sample 83-177
Commodity: Soapstone
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Softest material from 83-176.

Sample 83-178
Commodity: Black granite
Colour: Dark green
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: 52E/1NE
UTM: 426400 m E, 5454500 m N
Description: Fine to medium grained; close spaced joints trend 020°/60°S and 140°/60°W; joints and thin sheeting give a blocky surface; cut by many calcite veinlets.

Sample 83-179
Commodity: Black granite
Colour: Black
Lithology: Diabase
Dist./Tp: Same as previous sample.
NTS: 52E/8SE
UTM: 424950 m E, 5455850 m N
Description: Fine-grained, rusty weathering, highly fractured diabase.

Sample 83-180
Commodity: Decorative stone
Colour: Dark
Lithology: Porphyritic basalt
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: White to light yellow-green, subrounded feldspar phenocrysts in a dark green fine-grained matrix.

Sample 83-181
Commodity: Granite
Colour: Grey
Lithology: —
Dist./Tp: Kenora/Town of Keewatin
NTS: 52E/15SE
UTM: 387700 m E, 5513600 m N
Description: Layered granite; gneissosity 085-090°/75°N; 2 mm to 1.5 cm feldspar megacrysts in a fine-grained matrix; layering 3 to 10 mm; joints spaced 2 m trend 165-180°/90°; fractures 2 m apart are parallel to gneissosity; inclusions of amphibolite are elongate parallel to the gneissosity.

Sample 83-182
Commodity: Traprock
Colour: Black to dark grey
Lithology: Amphibolite
Dist./Tp: Kenora/Jaffrey
NTS: 52E/15SE
UTM: 390600 m E, 5515550 m N
Description: Foliation 075°/65-90°S; cut by minor quartz veins and pegmatites; thin felsic veinlets are parallel to the foliation; some parts split well enough to be flagstone but most do not.

Sample 83-183
Commodity: Traprock
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 388800 m E, 5515650 m N
Description: Similar to 83-182.

Sample 83-184
Commodity: Traprock
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Rusty weathering with disseminated pyrite and pyrrhotite.

Sample 83-185
Commodity: Traprock
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Rusty weathering with disseminated pyrite and pyrrhotite.

Sample 83-186
Commodity: Traprock
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 388700 m E, 5515400 m N
Description: Biotite amphibolite from near contact between amphibolite and grantoid rocks.

Sample 83-187
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Kenora
NTS: 52L/2SE
UTM: 383600 m E, 5547600 m N
Description: Massive, medium-grained, megacrystic granite; joints oriented 020°/90° and 115°/90°, spaced 2 to 5 m; sheeting 2 to 3 m.

Sample 83-188
Commodity: Granite
Colour: Red
Lithology: —
Dist./Tp: Same as previous sample.
NTS: 52L/2SW
UTM: 368300 m E, 5552350 m N
Description: Medium grained; texture like 82-207; joints spaced 2 m and greater; oriented 170°/90° and and 045-075°/90°; joints are often not visible; sheets 0.6 m at surface, thickening with depth; no visible inclusions.

Sample 83-189
Commodity: Granite
Colour: Deep pink
Lithology: Granite
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 368800 m E, 5552900 m N
Description: Similar to 83-188 but lighter in colour.

Sample 83-190
Commodity: Granite
Colour: Pink
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 368800 m E, 5552300 m N
Description: Massive; occasional biotite knots and minor pegmatite; biotite content locally increase to 10% in vague schlieren-like forms; joints trend 020°/90° and 060-075°/90°; 020° set is predominant and wide spaced; contains a trace of pyrite and epidote.

Sample 83-191
Commodity: Granite
Colour: Deep pink
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS:
UTM: 369500 m E, 5552700 m N
Description: Granite similar to 83-188.

Sample 83-192
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 369500 m E, 5552850 m N
Description: Joints spaced 1 to 5 m trend 065°; sheeting is 0.3 to 0.6 m; many large inclusions; similar to Whitedog Falls quarry; fine to medium grained.

Sample 83-193
Commodity: Granite
Colour: Red
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 369700 m E, 5553150 m N
Description: Joints spaced 1-2 m trend 135° and 070°; sheets 1 to 2 m; fine to medium grained.

Sample 83-194
Commodity: Granite
Colour: Pink
Lithology: —
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 369600 m E, 55532500 m N
Description: Uniform colour and texture; 2 to 5 m spaced vertical joints trend 015° and 170°; contains minor pegmatite patches.

Sample 83-195
Commodity: Slate
Colour: Dark grey
Lithology: Meta-argillite
Dist./Tp: Same as previous sample.
NTS: 52E/9SW
UTM: 401250 m E, 5488600 m N
Description: Slate intercalated with wacke-type metasediments; slate makes up 25% of this exposure; bedding trends 100°/90°; units are 0.6 to 3 m thick.

Sample 83-196
Commodity: Slate
Colour: Dark grey
Lithology: Meta-argillite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Sample of same material from contact with wacke bed.

Sample 83-197
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 404200 m E, 5485650 m N

Description: Fine grained; massive; contains about 1% feldspar megacrysts 0.5 to 1 cm; joints 050°/90° and 135°/90°, often close spaced; sheeting is thin <0.5 m next to surface.

Sample 83-198
Commodity: Flagstone
Colour: Dark grey
Lithology: Metavolcanic

Dist./Tp: Kenora
NTS: 52E/9SW
UTM: 409500 m E, 5484850 m N

Description: Well developed foliation at 085°/90°; splits well into 1 cm sheets; brown weathering carbonate veinlets and carbonate along the foliation.

Sample 83-199
Commodity: Slate
Colour: Black
Lithology: Meta-argillite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 409800 m E, 5484800 m N

Description: Cleavage 090°/90°; unit is 15 m thick; fractures 1 m apart are roughly perpenndicular to the cleavage.

Sample 83-200
Commodity: Soapstone
Colour: Dark green
Lithology: Chlorite schist

Dist./Tp: Same as previous sample.
NTS: 52E/8NE
UTM: 409900 m E, 5483100 m N

Description: Soft talcose schist associated with quartz vein cutting metasediments.

Sample 83-201
Commodity: Slate
Colour: Dark green
Lithology: Meta-argillite

Dist./Tp: Same as previous sample.
NTS: 52E/8NE
UTM: 410100 m E, 5483300 m N

Description: Thin slate units intercalated with non-fissile wacke; cleavage 090°; bedding 105°.

Sample 83-202
Commodity: Slate
Colour: Dark green
Lithology: Meta-argillite

Dist./Tp: Same as previous sample.
NTS: 52E/8NE
UTM: 409800 m E, 5482800 m N

Description: Unit 10 m thick; cleavage 090°.

Sample 83-203
Commodity: n/a
Colour: Dark green
Lithology: Chlorite schist

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Soft coarse schist with associated quartz-carbonate vein material; intercalated with slate units.

Sample 83-204
Commodity: Slate
Colour: Dark grey
Lithology: Meta-argillite

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Unit similar to 83-202, but grey rather than green

Sample 83-205
Commodity: n/a
Colour: White
Lithology: Quartz vein

Dist./Tp: Kenora
NTS: 52E/8NW
UTM: 409400 m E, 5482800 m N

Description: Rusty quartz vein associated with chlorite schist and rusty weathering metasediments.

Sample 83-206
Commodity: Flagstone
Colour: Dark grey
Lithology: Metagreywacke

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Non-fissile metagreywacke cut by quartz vein (83-205) and intercalated chlorite schist; rusty weathering and minor sulphide content extends over 3 m wide zone.

Sample 83-207
Commodity: Flagstone
Colour: Dark green
Lithology: Felsic metavolcanic

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 405100 m E, 5483250 m N

Description: Fissile chloritic metavolcanics, well foliated at 110°/90°.

Sample 83-208
Commodity: Soapstone
Colour: Dark green
Lithology: Metagabbro

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 405750 m E, 5481900 m N

Description: Soft, talcose-feeling, highly chloritic, fine-grained metagabbro; body is 6 m wide; foliated metavolcanics on either side.

Sample 83-209
Commodity: Crushed stone
Colour: Grey
Lithology: —

Dist./Tp: Kenora/Pellatt
NTS: 52E/15SE
UTM: 384600 m E, 5518600 m N

Description: Small quarry for highway construction; thin sheets and close joints.

Sample 83-210
Commodity: Crushed stone
Colour: Grey
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Sample of crushed material from stockpile.

Sample 83-211
Commodity: Soapstone
Colour: Dark grey-green
Lithology: Altered metabasalt

Dist./Tp: Kenora
NTS: 52E/7SW
UTM: 370900 m E, 5465300 m N

Description: Mica Point soapstone deposit; soft, talcose-feeling rock from a lens-shaped zone of soft rock intercalated with pillowed basalts; foliation trends 105°/55°N.

Sample 83-212
Commodity: Soapstone
Colour: Dark grey-green
Lithology: Altered metabasalt

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.

Description: Mica Point soapstone deposit; material similar to 83-211, but foliation is not as strong.

Sample 83-213
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora/Docker
NTS: 52F/14SW
UTM: 464500 m E, 5520100 m N

Description: Sample from north part of Vermilion Bay granite body.

Sample 83-214
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 465000 m E, 5519600 m N

Description: Sample from east-central part of Vermilion Bay granite body.

Sample 83-215
Commodity: Flagstone
Colour: Dark grey
Lithology: —

Dist./Tp: Kenora
NTS: 52F/5NW
UTM: 440400 m E, 5475200 m N

Description: Well foliated; splits to 2 cm slabs; foliation trends 080°/80°; minor rust on the weathered surface; cross fractures 1 m apart.

Sample 83-215A*
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Kenora
NTS: 52L/1NW
UTM: 396300 m E, 5555900 m N

Description: Massive; medium to coarse grained; feldspar megacrysts to 2 cm; joints 060° and 140° at 6 m and greater spacing; contains pegmatite dikes at various orientations and occasional xenoliths.

Sample 83-216
Commodity: Sand
Colour: Light Buff
Lithology: —

Dist./Tp: Kenora
NTS: 52F/5NW
UTM: 431300 m E, 5476600 m N (approx. location)

Description: Fine sand unit exposed in gravel pit unit is 76 cm thick.

Sample 83-216A
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 396700 m E, 5555800 m N

Description: Similar to 83-215A but material is somewhat fresher.

Sample 83-217*
Commodity: Granite
Colour: Dark grey
Lithology: —

Dist./Tp: Same as previous sample.
NTS: 52L/1NW
UTM: 399200 m E, 5554400 m N

Description: Smokey grey colour; pink veinlets and lenses of slightly coarser grained material; joints trending 100° are spaced at 1 m; sheeting is thin to 2 m. This granite (grey with pink streaks and veins) forms a unit that trends 155° and is about 100 m wide; it is bounded on either side by pink granite; the rock is probably usable only for bookends and similar objects.

Sample 83-218
Commodity: Soapstone
Colour: Dark grey-green
Lithology: —

Dist./Tp: Kenora/Kirkup
NTS: 52E/9NW
UTM: 403200 m E, 5508700 m N

Description: Talcose, schistose, rock associated with the vein system at the Pine Portage mine.

Sample 83-219
Commodity: Granite
Colour: Grey
Lithology: —

Dist./Tp: Kenora
NTS: 52L/1NW
UTM: 401200 m E, 5552500 m N

Description: Rusty weathering has developed on thin sheeted granite with biotite rich layers; rust is associated with the biotite.

Sample 83-220*
Commodity: Granite
Colour: Pink
Lithology: —

Dist./Tp: Kenora
NTS: 52K/2
UTM: —

Description: Massive, fine- to medium-grained granite with wide spaced joints at 015° and 120-150°; pegmatite veins and patches are spaced 6 to 15 m apart; colour varies from deep to light pink over 30 to 60 m; sheeting is 1 m or less at the surface.

Sample 83-221
Commodity: Granite
Colour: Light grey
Lithology: —

Dist./Tp: Kenora
NTS: 52F/10NW
UTM: 511800 m E, 5500800 m N

Description: Massive to weakly foliated; subvertical foliation 060-070°; joints are spaced at 1 to 2 m; trend 000°, 050° and 120°; rusty weathering is developed on some of the joint surfaces.

Sample 83-222
Commodity: Decorative stone
Colour: Green
Lithology: Metavolcanic

Dist./Tp: Kenora
NTS: 52F/8NW
UTM: 543500 m E, 5482300 m N

Description: Hyaloclastite with minor carbonate veinlets; foliation 300°/75°S.

Sample 83-223
Commodity: n/a
Colour: Grey
Lithology: Same as previous sample.

Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 543500 m E, 5482350 m N

Description: Carbonate concretions.

Sample 83-224
Commodity: n/a
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Clay containing carbonate concretions.

Sample 83-225
Commodity: Marble
Colour: Creamy white
Lithology: Quartz-carbonate vein
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 543600 m E, 5482450 m N
Description: Rusty weathering vein; quartz makes up 10% of the rock.

Sample 83-226
Commodity: 'Marble'
Colour: Light green
Lithology: Felsite dike
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Foliated felsite dike trends 310°, foliation trends 100°/90°; dike is 12 m wide.

Sample 83-227
Commodity: 'Marble'
Colour: Creamy white
Lithology: Quartz carbonate vein
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Vein material like 83-225.

Sample 83-228
Commodity: n/a
Colour: Light yellow-green
Lithology: Carbonatized quartz porphyry
Dist./Tp: Kenora
NTS: 52F/9SW
UTM: 542600 m E, 5486800 m N
Description: Grab sample of rusty weathering porphyry from dump at Tabor Lake mine.

Sample 83-229
Commodity: n/a
Colour: Green
Lithology: Carbonatized metabasalt
Dist./Tp: Same as previous sample.
NTS: 52F/9SW
UTM: 539400 m E, 5483000 m N
Description: Weakly foliated at 070°/90°; soft; 1 to 2 cm rusty weathered rind.

Sample 83-230
Commodity: n/a
Colour: Same as previous sample.
Lithology: Same as previous sample.
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: 539200 m E, 5483250 m N
Description: Similar material from same group of units as 83-229.

Sample 83-231
Commodity: Soapstone
Colour: Dark grey
Lithology: Metagabbro
Dist./Tp: Kenora/Zealand
NTS: 52F/10NE
UTM: 526150 m E, 5507750 m N
Description: Material from talc zone at Wabigoon soapstone deposit.

Sample 83-232
Commodity: n/a
Colour: Same as previous sample.
Lithology: Gabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Largely unaltered gabbro at Wabigoon soapstone deposit.

Sample 83-233
Commodity: Soapstone
Colour: Same as previous sample.
Lithology: Metagabbro
Dist./Tp: Same as previous sample.
NTS: Same as previous sample.
UTM: Same as previous sample.
Description: Grab sample of talcose rock from Wabigoon soapstone deposit.

Sample 83-234
Commodity: Black granite
Colour: Black
Lithology: Pyroxenite
Dist./Tp: Kenora/Lemay
NTS: 52E/9NE
UTM: 419900 m E, 5498800 m N
Description: Duplicate of 83-111.

Glossary

Many of the terms used by the stone industry are specialized or are used with a somewhat different meaning than those used in geological literature. The list compiled consists of terms used by the stone industry and geological terms used within this report. Definitions of terms have been taken from the American Geological Institute's *Glossary of Geology* wherever possible.

Ankerite: Iron bearing carbonate mineral $Ca(Fe,Mg,Mn)(CO_3)_e$ with a crystal structure similar to dolomite.

Aplite: A light coloured igneous rock characterized by a fine-grained sugary texture. The composition is variable but is generally granitic consisting of quartz, potassium feldspar and acid plagioclase.

Axial plane cleavage: Cleavage developed in folded rocks parallel to the axial surface of the fold.

Broach: To break out the stone between two drillholes to cut a block of stone away from the main mass of stone.

Channel: A vertical cut 10 to 20 cm wide made in quarrying to release a block of stone.

Cleavage: Splitting direction in stone.

Die: The upright, usually polished, part of a monument.

Felsic rock: An igneous rock made up of predominantly light coloured minerals (quartz, feldspar, etc.)

Foliation: A general term for a planar arrangement of textural or structural features in any rock.

Grain: Second easiest splitting direction in stone.

Inclusion: A fragment of older, previously crystallized rock within an igneous rock to which it may or may not be genetically related.

Intrusive rock: A rock formed by by the solidification of a molten rock mass that has intruded a preexisting rock.

Mafic rock: An igneous rock made up of dark coloured, predominantly iron and magnesium minerals.

Joints: Systematic fractures with little or no displacement developed as a response to tectonic stress.

Joint spacing: The intervals between joints of a particular set.

Joint set: A group of parallel joints.

Joint system: Two or more intersecting joint sets.

Knot: Small rounded mass of dark minerals (usually biotite or hornblende) found in granite. Classified as a textural flow.

Lapilli: Volcanic fragments 1 to 64 mm in diameter.

Lapilli tuff: An indurated deposit (rock) of predominantly lapilli size fragments in a finer-grained matrix.

Line: A textural change that appears as a linear feature on the surface of a granite block.

Massive: [igneous] Said of granite, diorite, and other igneous rocks that have a homogeneous structure over wide areas and that display a lack of layering, foliation, cleavage, or similar features. Also, said of the structure of such rocks.

Massive: [metamorphic] Said of a metamorphic rock whose constituents are not oriented in parallel position or not arranged in layers; said of a metamorphic rock that does not have schistosity, foliation, or any similar structure.

Megacryst: A non-genetic term for any crystal or grain in an igneous or metamorphic rock that is significantly larger than the surrounding matrix.

Paving blocks: Small rectangular blocks of granite formerly used for paving streets, docks, freight yards etc. They are currently used for landscaping; recycled blocks are often used.

Pegmatite: An exceptionally coarse-grained igneous rock composed mostly of quartz and feldspar with a large variety of accessory minerals; usually found as irregular dikes, lenses or veins.

Phenocryst: A relatively large conspicuous crystal in a porphyritic igneous rock.

Plug and feathers: A device for splitting stone consisting of a steel wedge and two steel straps that are set in a short hole drilled in the stone. The wedge is driven between the straps to give an even stress on the stone causing it to break. Plug and feathers are usually set about 10 cm apart for splitting granite.

Porphyry: An igneous rock in which larger crystals (phenocrysts) are set in a finer ground mass. adj: *porphyritic.*

Quarry bar: A device to hold a pneumatic drill to enable the drilling of a series of vertical or horizontal holes in a straight line.

Rift: The easiest splitting directing in stone.

Rheology: The study of the deformation and flow of matter.

Schist: A strongly foliated crystalline rock formed by dynamic metamorphism which can be readily split into thin flakes or slabs due to the well developed parallelism of more than 50% of the minerals present, particularly those of lamellar or elongate prismatic habit, e.g. mica, hornblende. The mineral composition is not an essential factor in its definition (American usage) unless specifically included in the rock name, e.g. quartz-muscovite schist. Varieties may also be based on general composition, e.g. calc-silicate schist, amphibolite schist, or on texture, e.g. spotted schist.

Schlieren: In some igneous rocks, irregular streaks or masses that contrast with the rock mass but have shaded borders. They may represent segregations of dark or light minerals, or altered inclusions, elongated by flow.

Sheeting: Sub-horizontal joints that divide granite into layers; sometimes referred to as beds.

Slaty cleavage: A pervasive parallel foliation of fine-grained platy minerals in a direction perpendicular to the direction of compression, developed in slate and similar metamorphic rocks by deformation. Rock can be split into thin sheets.

Texture: [petrology] The general physical appearance or character of a rock, including the geometric aspects of, and the mutual relations among, the component particles or crystals: e.g.

the size, shape, and arrangement of the constituent elements of a sedimentary rock, or the crystallinity, granularity, and fabric of the constituent elements of an igneous rock. The term is applied to the smaller (megascopic or microscopic) features as seen on a smooth surface of a homogeneous rock or mineral aggregate.

UTM grid: A 1000 metre grid printed on 1:50 000 scale National Topographic Series maps. It enables locations to be specified to the nearest 100 metres.

Xenolith: An inclusion of pre-existing rock in an igneous rock.

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